The Northwestern MILLER
MILLING PRODUCTION SECTION

How to Keep Your Roller Mills Rolling

By R. W. Stiger

Roller mills are precision equipment, but to get high yield and a top quality product, it is important that your rolls be checked periodically and kept in good condition

THE roller mill is probably one of the most precise units available for the reduction of materials. Its design makes possible an unlimited number of changes in grinding characteristics. This applies not only to the shape of the particle, but also to its size. The proper application of a roller mill involves a product that is "tailor-made." But, the roller mill has one drawback. No matter how good the design, unless the rolls used are properly corrugated and in good condition, the product just won't be up to specifications.

To get the longest life and the most satisfactory production from your roller mill rolls it is essential that you inspect them regularly. The working life of corrugated rolls will vary according to the amount of care used in handling them and the service they have to perform. They may be ruined quickly by allowing them to run together or they may even be damaged by careless handling before they are installed. Dull rolls create excessive heat, require more horsepower to operate and give low quality product reduction.

EDITOR'S NOTE — Mr. Stiger is chief product engineer, Size Reduction Division of Sprout, Waldron & Co., Inc.

Most Common Corrugations

Although there are a wide number of corrugations used, the four most common are the modified Dawson, the sawtooth, the oat crimper and the LePage type. Let's look at each of these briefly.

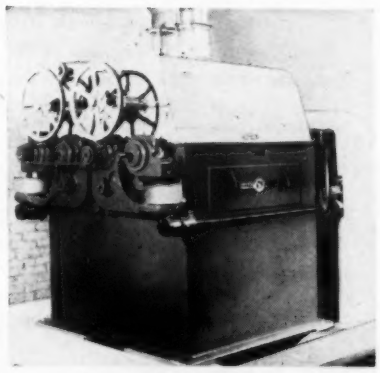
1. **The Modified Dawson:** This corrugation is recommended for wheat break rolls. It is preferred by millers because the dull top permits close grinding without cutting the bran unnecessarily. The shape of this corrugation and the round bottom allow the middlings to discharge freely without being mutilated. This produces a maximum of unbroken middlings.

2. **The Sawtooth:** The sawtooth design with sharp top and round bottom eliminates packing. It is widely used for grinding corn, soybeans, screenings, spices, chemicals and similar products where a sharp cut is required.

3. **The Oat Crimper:** This simple uniform corrugation can be run in either direction with good results, and is very popular for oat crimping.

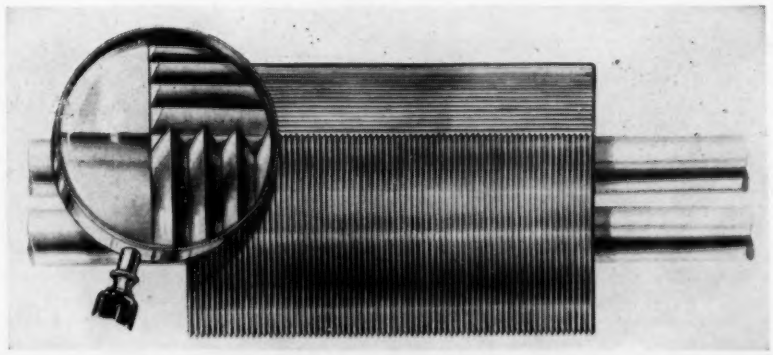
4. **LePage:** The LePage type corrugation offers a means for cutting cereals and many other materials into sharp clean cut particles which are uniform in size and shape. The design leads to a minimum of flour or fines and is recommended for use when a maximum granular stock is required. This corrugation, like a series of knives, cuts clean, cube-like particles which lie in the broad "U" bottom. The particles are released without the pinching or crushing action obtained in other corrugation designs.

Figure 1



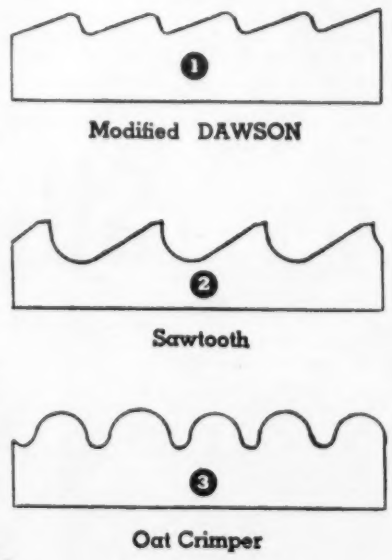
The roller mill is a precision machine.

Figure 2



Rolls are carefully machined or ground from chilled iron.

Figure 3

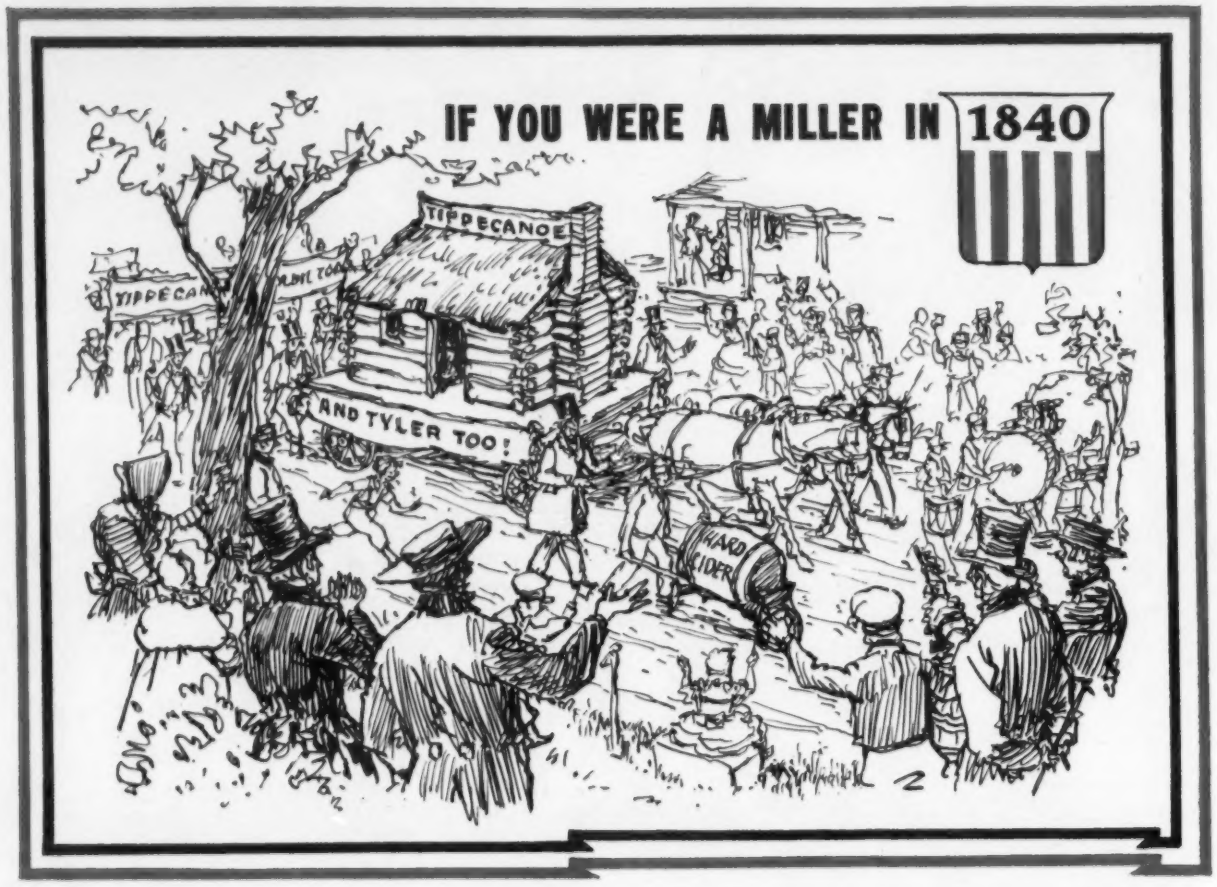


These roll corrugations are in widest use.

The LePage type is unequaled for cracking corn and wheat, cutting breakfast cereals, pellets, nut meats, roasted cocoa beans, steel cut coffee, soybeans, and many other items.

Grinding and corrugating of rolls take skill, experience and accurate

(Turn to ROLLER MILLS, page 12a)



SWISS SILK

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WYDLER

Autocratic Martin Van Buren, the old "Red Fox," was President in 1840, running for his second term and quite contemptuous of William Henry Harrison who was out to unseat him.

Harrison, the hero of the battle of Tippecanoe, and Tyler, the vice-presidential nominee, adopted the log cabin and a barrel of hard cider as their campaign symbols. "Tippecanoe and Tyler Too" swept the country in a highly emotional campaign built on back-woods philosophy.

In 1840 the miller was the center of backwoods life—the mill being the central meeting place for gossip, business and politics, generally covering a wide community.

By 1840 SWISS SILK was in wide use in the eastern seaboard mills and as the population tide turned to the "West" (Ohio and the Central States) more and more local mills were turning out the finer, smoother flour made possible on this superfine bolting cloth . . . the same SWISS SILK that millers today prefer for every sifting operation . . . the finest sifting cloth money can buy.

Impact Disintegration and Air Sifting

By E. NENNINGER, Dipl.-Ing.

THERE are two essential types of machines used in impact disintegration: the impact mill and the baffle plate mill. In both machines disintegration is effected by means of short and hard blows which are transmitted by the energy

$$\frac{m}{2} v^2.$$

In impact disintegrators this energy impact takes place at the rotor, but with baffle plate disintegrators at the baffle plate ring.

This energy impact shakes the structure of the material to be ground, causing it to break up at its natural boundaries and crenations. This selective disintegration factor

EDITOR'S NOTE—Mr. Nenninger is with MIAG of Braunschweig, Germany. His material on "Impact Disintegration and Air Sifting" is reprinted from the special edition of MIAG News recently published.

is of considerable importance generally for production techniques and particularly for grain milling, because it affords careful disintegration at relatively low heating.

In the following, it is proposed only to deal with baffle plate disintegrators in which each particle of material to be ground is struck only once when passing the machine. Small particles are struck less violently than large particles, on account of their smaller size. At a presupposed number of revolutions of the rotor, i. e. at a constant speed v, the kinetic energy

$$\frac{m}{2} v^2$$

will, therefore, not be sufficient to disintegrate the structure of relatively small particles. This means that any feed which is below a certain grain size will leave the mill practically without having undergone any change, only damaged or abnormal particles might be disintegrated. The last mentioned manifestation is also applicable to pest control.

A certain number of revolutions, n, and the velocity of projection will determine the size of the minimum grain to be obtained.

This critical fineness can be adjusted by means of changing the number of revolutions of the fan blower, i. e. its peripheral speed. The rotor stability and power requirements limit the peripheral which, in turn, limits disintegration. The fineness or grist size limit depends on the specific gravity and also on the structure of the material, and the order of magnitude is 10μ. This figure should be considered as an approximate reference only.

Impact Disintegration

The baffle plate disintegrator—which can be used in practically all stages of grain milling where it will prove to be particularly successful in certain grinding processes—will meet all demands for careful treatment and selective size reduction of the grain. Up to the present time, operators have only known of its application as a means for exterminating insects in finished flour—to break up whole grains infested by insects—to reduce contamination of flour—and for cleaning and shelling of grain. We cannot deal with all these varieties of uses in detail; therefore, we propose to discuss only the application of centrifugal mills with regard to protein displacement and quality modification of flour.

Application of impact disintegration and air sifting to change the quality of the flour with regard to color, fineness, granularity, chemical composition and baking properties:

For better understanding of the possibilities and the purpose of the application of centrifugal mills in flour production in attaining a certain quality, we shall explain a few fundamental factors regarding grain structure, although these may be generally known.

The part of the grain which is essential to flour production—the endosperm—consists of approximately 30,000 endosperm cells which measure 50 to 200μ. The substance of these endosperm cells consists of starch granules measuring 1-50μ, which are "bonded together" with a protein. The endosperm cell walls represent the boundary of the endosperm cells, which are the "boxes" containing starch and protein. The customary process of flour production requires careful treatment of the pericarp layers while crushing the endosperm so that all particles obtained are finer than 200μ. In other words, any product is called flour when the endosperm has been reduced to particles measuring below 200μ. Taking a closer look at the composition of the product, which is called flour, we shall find the following fractions:

1. Protein particles up to 18μ.
2. Starch particles from 1 to 50μ.
3. Formation of small or large starch granules bonded together with protein.
4. Endosperm cell fragments.
5. Endosperm cell substance bonded together without cell walls.
6. Endosperm cells and cell formation mainly with adhering cell wall shreds, starch granules and protein formation.
7. Endosperm cell wall fragments.

"Degree of Disintegration"

Protein (1) and isolated starch particles (2) and endosperm cell wall fragments (7) will be referred to as disintegrated flour; the starch formation (3), endosperm cells, cell formation and cell fragments (4, 5) will be termed unbroken flour. The portion of the disintegrated flour product in the total flour in percent, may be called the "degree of flour disintegration." We can get the following values for the degree of flour disintegration if we have a type 550 flour, that has been produced in accordance with "standard" methods, by means of rollers:

soft wheat 40—60
hard wheat 10—30

The degree of flour disintegration can be determined by means of air sifting and microscopic inspection but also by screening (50μ) through special sieves.

In milling, the degree of flour disintegration is mainly governed by the type of wheat and its conditioning. Roller arrangement and bolting cloth can influence this figure only up to a certain limit. The degree of disintegration can be increased—100 may be reached under ideal conditions—by regrinding the finished flour in impact disintegrators. It is obvious that reductions or decreases cannot be achieved by this method. Grinding by means of rollers to obtain the disintegration degree 100 is highly improbable, and contrary to impact disintegration it will impair the starch, especially in hard wheat.

If the baffle plate disintegrator is installed in a grinding process, it will be possible to raise or lower the degree of flour disintegration due to its special suitability for a definite disintegration as described previously. Apart from the degree of flour disintegration, disintegrating by means of the impact mill will cause a further change of the endosperm cells and cell formation, because any particles adhering to the endosperm cells will be knocked off, and besides the exposed particles of protein and starch, one will only find sharply defined and edged endosperm cells through which the flour gets a granular and hard character, and a more yellowish color.

These endosperm cells — irrespective of whether there is just one, two or perhaps more which are bonded together—shall be called uncracked endosperm cells. Those that still show adhering particles, as described above, shall be the cracked endosperm cells.

Flour Property Fineness

In consequence, the following data can be defined:

1. grain-size curve of sieve analysis above the sieve limit;
2. grain-size-distribution curve from sedimentation analysis or air sifting;
3. the specific surface in cm^2/g as physical characteristic;
4. degree of disintegration from air sifting and microscopic inspection, or sifting;
5. property of the endosperm cells —uncracked, cracked or microscopic inspection.

Grain-size-distribution and specific surface (1-3) provide information regarding the size of the disintegration product. The degree of disintegration determines the condition of the flour, and whether further disintegration is possible.

Air Sifting

As shown, it is possible to influence the degree of disintegration and the surface of the flour particles without air sifting by means of impact disintegration. Thus only minor changes result with regard to the batch property; the processing conditions of the flour show greater changes during dough making.

If the chemical composition of the flour is also to be changed, and especially the concentration of starch and protein, it will be necessary to carry out fractionating by means of air sifting.

Owing to the flour composition, this air sifting must be carried out at approximately 18μ and 45μ. With a flour of a disintegration of 100, separation of 45μ would be unnecessary as, in this case, there would be no particles larger than 45μ.

The separation of a 550 soft wheat flour type with a 10% protein content and a degree of disintegration of 100 at 18μ yields a weight percentage (of the total quantity) of 26 rich in protein, i. e. its protein content being 22%, whereas a portion of a weight percentage of 74 is poor in protein, its protein content being only 5.8%. Supposing we take the same soft-wheat flour type 550, with an initial protein content of 10%, the degree of disintegration being 78 we shall again find the separating limit at approximately 18μ. The fine fraction also amounts to 26% of the weight of the disintegrated flour and therewith amounting to 20.2% of the total flour, and the protein content is also approximately 22%. The remaining fraction which amounts to 79.8% of the total flour, i. e. 74% of the disintegrated flour, contains approximately 7.0% protein. If separation is carried out once more, say at approximately 45μ, one will get the fraction with low protein content, with a weight portion of 57.8% and 5.4% protein content, while the residual fraction is unbroken flour with a percentage weight of 22 and approximately 11% protein content. In flour which has been produced from Manitoba wheat that contains 15% protein, the values are quite different. The degree of disintegration in this flour is 55%. The effect of the protein displacement is weaker. But when compared with soft-wheat flour there is a far greater differentiation with regard to the ash. Producing flour with a disintegration degree of 100 from hard wheat will require a great deal more energy than is necessary for soft wheat flour.

For impact disintegration, and especially for fine pulverizing of semo-

JAPANESE VISITORS—Prominent Japanese agriculturalists recently visited the plant of Buhler Bros. at Uzwil, Switzerland. Pictured from left to right are: E. Gastpar, one of the firm's department managers who acted as interpreter; Mr. Uemura; Adolf Buhler, one of the owners of Buhler Bros.; T. Honna, vice minister for agriculture and forestry, and Dr. Max Zollinger, general manager of the milling machinery manufacturing firm.

lina and flour products, we have continued to develop our Strator, which has stood the test throughout many years of service, so that we have now arrived at an extremely high throughput efficiency at low specific power consumption. At first this Strato-Mill was used in conjunction with the centrifugal airsifter. In accordance with the latest operating methods this milling machine is now combined with the centrifugal sifter and is known as the Strato-Sifter. This has resulted in specific power, investment and space savings. Through this arrangement there has been definite improvement in the working efficiency of the centrifugal sifter.

The most commonly applied process, which also seems to be the simplest, is to regrind the ready mixed flour and then to fractionate it, i. e. to separate it into several portions of different quality by means of the centrifugal air sifter. The mill and the sifter can be combined as one unit for this purpose.

In a procedure, which we have developed, and for which patents have been registered, the centrifugal separator that is located in the pneumatic stock conveying system, has been designed as an air sifter so as to assist separation of the finest flour fraction rich in protein either in individual or any given number of grinds, without requiring the considerable energy and installation and investment costs as necessary for the first procedure.

The flour varieties of the various grinding processes differ considerably with regard to composition, protein content and other quality properties. Therefore, it is better to influence an individual grind while it is being produced, and also to break it up into variable constituents, rather than mixing these flour varieties, only to separate them again to obtain fractional differences with regard to quality. This is a possibility of obtaining products that have still more varying properties. These procedures have other considerable advantages, because we are using the regrinding machine during the grinding process in preference to the roller mill, which permits us to eliminate one grinding stage to gain a further saving by reducing energy and investment costs.

Other advantages are gained through reduction and improvement of the complete grinding process. The impact treatment of semolina and dunst products results, besides obtaining finest flour, semolina and dunst, in a very high percentage of unbroken endosperm cells or formations, which are so-called granular products.

Thus, flour varieties produced from soft wheat become more analogous to those of hard wheat, with regard to granularity, for instance. A centrifugal and air sifting machine in addition or in place of a roller mill can be fitted either in one or as many grinds as required, should this prove to be advantageous. The centrifugal machine prepares the material to be ground, and the air sifter removes the fine material, i. e., the high protein containing flour fraction measuring up to 18μ.

The plansifter will then be fed with a product that is absolutely free from all these very fine particles. This will relieve the sifter and in consequence improve sifting. Judging by experience there is a possibility of getting finer sifting results than those obtained at present. Supposing we take 100μ and with reservation 75μ, as the present sifting limit, one will then be able to count on 60μ or 40μ, respectively, depending on operating conditions. If the disintegrator and sifter are now replaced by the combined sifter-disintegrator—as described—the plant will then become a particularly economical proposition.

A great deal is done by the machine manufacturer to put economical and technically sound plants at the disposal of flour producers. It will be entirely in the hands of the flour producers and the processing plant industries to carry out further investigations into their practical use for "secondary quality" flour varieties. Up to the present the following examples of use have either been investigated or taken into consideration as being of interest.

Use of:

1. Flour with low protein content for biscuit production.
2. Flour with low protein content which is especially granular, as household flour.
3. Flour with low protein content for the starch industry.
4. Flour with high protein content for enrichment of bakers' flour.
5. Flour with exceptionally high protein content for the production of baked foods with low starch content.

—BREAD IS THE STAFF OF LIFE—

Purina Makes Several Management Changes

ST. LOUIS—Several management changes in the production and branch plant staffs of Ralston Purina Co. have been announced by David L. Grant, manufacturing vice president.

Paul F. Cornelsen, eastern division production manager, was named central division production manager, succeeding J. F. Jones who resigned recently.

William H. Derr, manager of the firm's Richmond, Va., plant, is now eastern division production manager.

Donald Danforth, Jr., office manager and buyer at the Ottumwa, Iowa, branch plant, was named manager at Richmond, Va.

Henry T. James, of the production staff, has been named manager of technical soybean production. He will supervise soybean production in the company's soybean plants at Decatur, Ill.; Memphis, Tenn.; Raleigh, N.C.; New Madrid, Mo., and Louisville, Ky.

General Mills Cited For Overseas Exhibits

MINNEAPOLIS — General Mills, Inc., has been awarded a citation by the Office of International Trade Fairs, U.S. Department of Commerce, for contributions to official U.S. exhibits overseas during 1959. The company's participation in the government-sponsored showings was described as "a magnificent aid in the advancement of world understanding of peace and prosperity under the American system of free and competitive enterprise."

The country's 1959 successes in these overseas trade fairs were made possible, says USDC, by "American industry's continuing support of the program to tell the people of other lands the story of our free enterprises."

A variety of General Mills products was displayed at the American Exhibition in Moscow last fall, attracting thousands of Russian visitors. Other showings were presented at four cities in India—Madras, Calcutta, New Delhi and Bombay—as well as Lima, Peru, and Cologne, Germany. They ranged from cereal products and Betty Crocker cake and cookie mixes to cellulose sponges, family flours and products that showed uses being made of soybeans and soybean products in America. Participating in the 1959 overseas exhibits were the company's grocery products, flour and oilseeds divisions.

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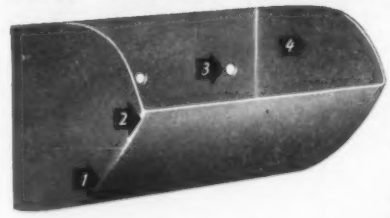

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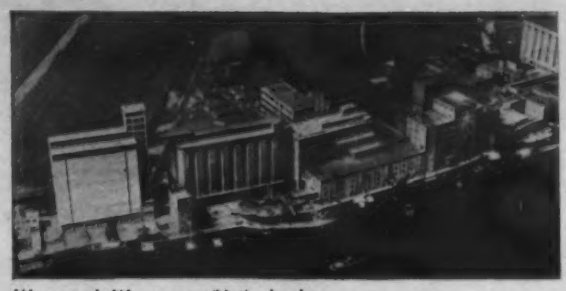


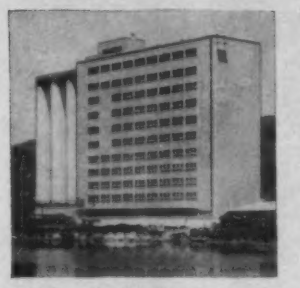
Wessanen's Wormerveer/Netherlands

Harina La Moderna S. A., Puebla/Mexico

The firm of MIAG of Brunswick (Western Germany) was formed by the amalgamation of the five largest German mill building firms who had been responsible for the erection of more than 50 per cent. of all mills throughout the world; in Central Europe, this proportion was over 75 per cent.

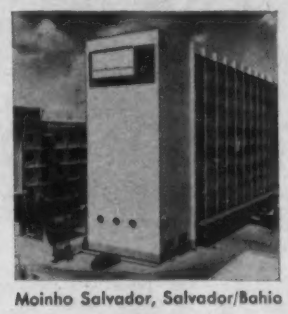
With its up-to-date machinery and unrivalled experience in the field of mill construction, MIAG has been able in recent years to maintain its world-wide reputation and deliver hundreds of the most modern grain mills and silos. The pictures give an impression of some examples of MIAG work.

Bremer Mills (Pty) Hennenman/Orange Free State



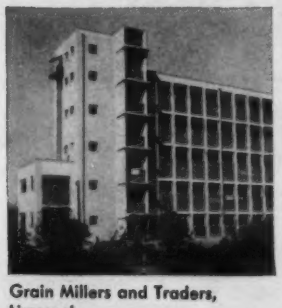
Moinho Atlantico, Rio de Janeiro

Sherkate Karkhane Ard Iran/Iran



Moinho Salvador, Salvador/Bahia

Societé Industrielle du Levant, Bakalian Mill, Beyrouth/Libanon



Grain Millers and Traders, Limassol

High Capacity Silo Lobito in Port. West Africa

Silo of the Flour Mill in Tsurumi, Tokio/Japan

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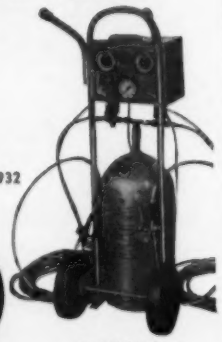

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James E. Thornton To Head Colorado Wheat Committee

James E. Thornton

DENVER — James E. Thornton, former administrative assistant to U.S. Rep. Byron L. Johnson, has been named manager of the Colorado Wheat Administrative Committee. The appointment was announced following action by the committee. He replaces Theodore F. Fiedler who has resigned as manager to direct activities of the Great Plains Wheat Market Development Association's Rotterdam, Holland, office.

Mr. Thornton joined the staff of Rep. Johnson in 1958 and was named administrative assistant in January, 1959. He was graduated from Denver University in 1958 with a degree in international relations. He and his wife reside in Westminster, Colorado.

As manager of the Colorado Wheat Administrative Committee, Mr. Thornton will be responsible for administering policies and programs in behalf of more than 20,000 Colorado wheat growers in 32 counties.

The wheat committee, established by a state marketing order early in 1958, is supported financially by a 4-mill levy on each bushel of wheat sold by wheat farmers. Policies and planning are determined by a nine-man administrative committee and a 32-member advisory committee, elected from wheat farmers of the 32 counties.

The committee's chief function is marketing wheat, and most of its efforts are directed toward increased sales in foreign countries. Much of the work is comprised of cooperative endeavors with similar groups in Kansas and Nebraska.

MACHINERY-WHEAT BARTER DEAL FLOPS

REGINA—A plan for the exchange of Italian machinery for Canadian wheat has died. Ansaldo San Giorgio SPA of Genoa wanted to supply the Saskatchewan Power Corp. with heavy electrical equipment, taking wheat in exchange. The proposal fell through because of difficulties in connection with price. The necessary wheat would have to be acquired from the Canadian Wheat Board, and the scheme was seen as too complicated to warrant the effort, observers say.

Schools—a $600 Million Outlet for Food

CHICAGO—Schools have become "big business" for the food industry, and most of it is local, according to a new marketing research report by the U.S. Department of Agriculture. Public schools alone provide a total annual outlet for about $600 million in food for daily lunches, most of which is purchased from local processors, distributors and wholesalers. Flour and other cereal products delivered to the school outlet were valued at $15 million. About 74 million pounds of white flour, the outstanding item of this food group, were delivered to public schools. Bakery products going into the public school market had a value of $46 million annually, of which one-half was bread. Bread accounted for 140 million of the 219 million pounds of bakery products delivered to schools. Agricultural Marketing Service researchers made a detailed, nationwide study of foods used during the 1957-58 school year. They found the value of food from all sources, both purchased and donated, delivered to 60,000 public schools having a feeding service amounted to $597 million, or $28 a pupil for the 21 million enrollment. Only 15%—about $95 million—was the value of food donated directly by the federal government from purchases made specially for school lunches or from commodities acquired under price support and surplus removal programs. In addition to volume and value of foods delivered to schools, the marketing researchers examined sources of supply, food buying practices, and other pertinent facts. At least 95% of total purchases of the major food classes were made at the wholesale level.

L. E. Thompson Joins Reid-Strutt

PORTLAND, ORE. — Reid-Strutt, Inc., Portland, has announced the appointment of L. E. (Tommy) Thompson as manager of the firm's industrial division.

The company handles processing and milling equipment and provides mill design and engineering services. The industrial division includes activities in flour milling and a company-manufactured system for pneumatic conveying.

Mr. Thompson formerly was a western representative for Sprout, Waldron & Co., Inc., having been with that firm since 1951.

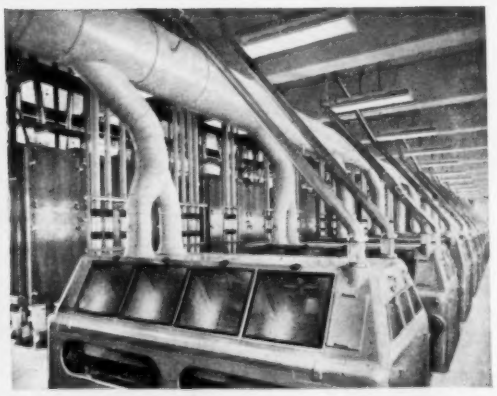
Standard Milling Plans Buffalo Dock Repairs

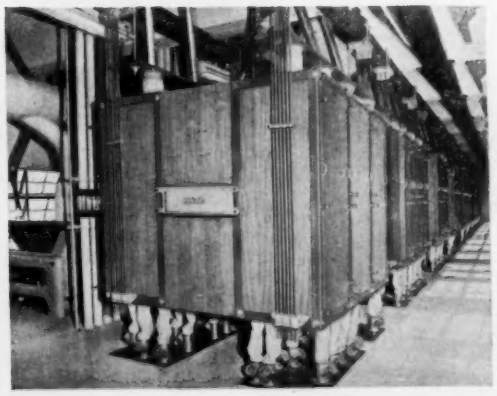
BUFFALO—Standard Milling Co. plans to undertake construction on a $35 000 reconstruction and repair job on its Buffalo River docks, said William L. Rogers, Jr., vice president.

U.S. Army Corps of Engineers approval has been requested for permission to reconstruct 118 ft. of dock, and repair 87 ft. The work, to be completed by June, will involve construction of a steel sheet pile bulkhead tied back by tie rods and anchored to the concrete foundation of Standard Milling's elevators, which are about 1,000 ft. up the river from the bend at Ohio St.

A typical experience in the work-a-day lives of thousands of industries.
DOGGONE IT, PETE, THIS HAS GOT TO STOP!
PLANT MANAGER
. . . Just came from the bag-filling department . . . Not a man wearing a respirator.
I'm not surprised, Jim. The men would rather breathe dust than wear heavy old respirators.
I know it. But I'm supposed to enforce safety rules. Oh, for a light, comfortable dust mask!
Here's what you want, men—The Flex-A-Foam Dust Mask—light as a feather!
It's sure light and comfortable, but can it do a man-size job?
Seen Purchasing yet? They're up on new developments.
PURCHASING AGENT
It should. It filters non-toxic dust particles 100 times smaller than you can actually see.
Order a trial dozen, Bob. Maybe they'll wear these without continual prodding.
They're glad to wear Flex-A-Foam Dust Masks. Our troubles are over!
LATER
You're right! We should now equip the entire plant!
(quantity prices as low as $1.10)
Send Today
$1.45
(Industrial price only)
Try low-cost FLEX-A-FOAM and judge proof by performance.
FLEXO PRODUCTS, INC.
Westlake, Ohio

First flour mill in the Philippines





Robinsons have completed the most comprehensive project ever carried out by a firm of flour milling engineers and consultants—the installation of the first mill in the Philippines. For advice and service on all aspects—site, design, staffing, operation and the numerous complexities of modern milling—the executives of Republic Flour Mills turned to Robinsons. So successful was this project that Robinsons immediately received a repeat order for increasing the mill's original output of 17,250 lb. per hour to 32,000 lb. per hour. This most modern mill in the world is fitted throughout with Robinson's latest high capacity machines. Whatever the type or capacity of milling installation Robinsons have the machines and service for the job.

TOP: *The first flour mill in the Philippines.* LEFT: *Robinson purifiers type PHm with the unique tail sheet aspiration grid.* BOTTOM LEFT: *The Robinson roller floor with its smooth quiet efficiency is in a class by itself.* BOTTOM RIGHT: *The Robinson Square-Sieve Sifters give a dressing unequalled by any other machine of their type yet produced.*

Planned, designed, engineered, equipped and started up by

Robinson

Thomas Robinson & Son Limited, Rochdale, England
Kipp Kelly, Ltd., 68 Higgins Ave., Winnipeg, Man., Tel. 922507

Study Shows Mice Primary Cause for Fouling Stored Grain

FARGO—Two years' research in which more than 800 samples of binned wheat were obtained from farm storage bins in Cass and Grand Forks counties put the spotlight on the ordinary mouse as the top offender when it comes to fouling up stored grain.

The study is reported by D. M. Noetzel, assistant entomologist, and Dr. J. A. Callenbach, associate director and former entomologist. Both are with the North Dakota Agricultural Experiment Station which did the research with the aid of funds granted by the National Institutes of Health. The samples were gathered in the period 1957-1959.

Not only did the research reveal the mouse as the main source of contamination in the stored grain but also as a serious factor in actual destruction of grain. On the basis of the grain loss evident in the bins sampled, the experiment station estimates the total stored wheat eaten by mice in North Dakota to total 150,000 to 200,000 bu. in 1957-1959.

In their research, the investigators noted that wheat not under government storage loans actually was freer of rodent contaminants than that under loan.

An earlier phase of the study showed relatively little contamination of wheat occurred while the grain was in the field or swath.

Loose doors on bins were by far the most important single factor in permitting mice to get into grain bins. Good door repair could cut down rodent contamination in the bins sampled by one-half, it is believed.

Wheat stored in a separate building tended to remain less subject to either rodent or insect contamination, compared with storage structures having multiple uses.

In general, the research men observed no differences in cleanliness of grain between the strictly grain farm and the grain plus livestock farm.

The full report on sources of stored grain contamination is in the January-February 1960 issue of Farm Research, published bimonthly by the Agricultural Experiment Station.

FLOUR MILLS RECOVER
EXTRA PROFITS
with an IPI RECOVERY SYSTEM

Recovers Valuable Washer Solids

An IPI Recovery System provides a practical—and profitable—method of recovering wheat-wash water solids. These solids are a marketable feed supplement, with a protein and fat content comparable to mill-run or mill-feed. Operational tests prove that in eight days—or less—mills recover the equivalent weight of one hour's grind (a minimum of ½%).

Eliminates Sewage Problems

Removing solids from the washer water drastically reduces the cost of sewage disposal. When an optional second stage (water recovery) is added, *total sewage volume* is generally reduced by as much as 90% or more.

Eliminates Water Problems

The use of the optional second stage of an IPI Recovery System enables mills to recover wheat wash water for re-use —and results in saving up to 90% of city water volume.

Your mill can recover *extra* profits—and solve sewage and water problems — too. You may have any additional information you wish, without obligation.

SEND FOR FREE FOLDER

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Industrial Processes, Inc.
621 S.W. Morrison, Portland 4, Oregon

—BREAD IS THE STAFF OF LIFE—

Mill Continues to Use Water Wheels

One of the oldest mills in the U.S. is the mill in the little town of Lynnville, Iowa. Lynnville has a population of 400 persons and is located near New Sharon in the southeastern corner of the state. The Lynnville mill is more than 93 years old, having been established in 1866.

At least that's the comparative estimate of Dale Snyder, sales manager of the Cedar Rapids plant of Hubbard Milling Co., which is another "oldtimer." Hubbard recently passed its 81st birthday. Mr. Snyder points out that if the Lynnville mill isn't the oldest in the country, "It's probably the oldest one in the U.S. with still-operative water wheels."

Mr. Snyder ferreted out his information in a business call upon Harris (Huck) Wagaman, who has been a long-time Hubbard Sunshine feed and mix customer.

Huck Wagaman is the third continuous generation of Wagamans to run the mill, which was founded by John Sparks at the close of the Civil War.

But the big wheels no longer turn within the wooden walls erected by the pioneer Sparks, nor do the river waters roll over the original dam. The last vestiges of Mr. Sparks' early industry were replaced during the regime of John A. (Fred) Wagaman, who joined his father, William K. Wagaman, in the enterprise in 1905. The elder Wagaman had purchased the property in 1898. It was Fred who kept the machinery up to date, however, and who knocked out the original wooden dam in 1918, replacing it with the present concrete one.

—BREAD IS THE STAFF OF LIFE—

Purina Scholarship Program Announced

ST. LOUIS, MO.—During the next school year, 54 seniors in colleges of agriculture located throughout North America and in the U.S. territorial possessions will again be completing their undergraduate work with the assistance of the Ralston Purina scholarship program.

The $500 Purina scholarship is awarded to one incoming senior at each of the 50 U.S. land grant colleges. It is also awarded in three Canadian agricultural colleges and in one college in Puerto Rico.

The student selected to receive the scholarship is recommended by a scholarship committee consisting of faculty members of the college.

This will be the sixth year of the Purina scholarships. During the first five years, the program has assisted 265 students to finish their senior year.

Letters have been sent by the Ralston Purina Co. to all the eligible colleges offering the 1960-61 scholarships, according to an announcement by J. D. Sykes, Purina vice president. The faculty committee chooses the recipient on the basis of his scholastic record, participation in campus affairs and eligibility for financial assistance.

INCREASE YOUR CAPACITY

INCREASE YOUR EFFICIENCY

DECREASE YOUR COST

DIXIE-PORTLAND FLOUR CO.

Pictured above is one of the new 27" Entoleter Centrifugal Impact Mills recently installed at Dixie-Portland. Mr. Cobble, Milling Superintendent, checks one of the new units which requires only 14.8 sq. ft. of floor space.

By using Entoleter® Impact Mills to perform certain milling functions, additional roller mill surface can be made available in any flour mill. This can mean an increase in total mill capacity by as much as twenty percent.

This new and effective application of centrifugal mills for milling of selected streams utilizes a relatively low cost machine which requires a minimum of floor space, power and man hours.

DIXIE-PORTLAND FLOUR CO. IN CHATTANOOGA, PROVES IT!

F. H. Cobble, Milling Superintendent for Dixie-Portland, has this to say of his new installation of Entoleter Impact Mills: "The Entoleter Mills we installed are doing an excellent job, consistently producing the grind we want. There is no problem of temperature rise. Freeing the roller mills of this step has given us a big jump in total capacity."

Write Now! We will be glad to send literature or arrange a visit to discuss this important new concept in grain milling.

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THE HOWE SCALE COMPANY

Wheat for Cattle Undergoing Tests

HUTCHINSON, KANSAS — Value of wheat in cattle feeding rations is being tested at the Ft. Hays Experiment Station under the supervision of Kansas State University, according to W. W. Graber, administrator for the Kansas Wheat Commission, Hutchinson. The projects being carried out were drawn up last spring by the Experiment Station in cooperation with the Kansas Wheat Commission.

The commission's part was to obtain 2,000 bu. Commodity Credit Corp. wheat for research purposes. When the application was filed with Commodity Credit, Mr. Graber said, it was turned down because CCC was "not interested in the use of wheat for feed purposes." After this rejection, the commission decided to pursue the matter further, and sent copies of the CCC letter to Kansas congressmen and senators, with a strong protest against the action taken by CCC.

The Kansas congressional delegation responded favorably to the commission request, and Sen. Andrew F. Schoeppel and Congressman J. Floyd Breeding made contacts with CCC and the secretary of agriculture. Their action resulted in the wheat being made available to the K-State Experiment Station for research, and the commission was notified in a telegram from Sen. Schoeppel that the red tape had been cut.

Feed research in areas of providing protein needs for cattle on feed is being carried out by using wheat in pelleted forms and as rolled wheat. Other areas will be tested in full feeding rations, wintering rations, mixtures of other cereal grains with wheat, and other important feeding operations.

Latest Rulings in Labor Relations

CAN AN EMPLOYER CHANGE THE WORKWEEK TO ELIMINATE OVERTIME PAY?

EFFECTIVE AT ONCE, NO MORE SUNDAY WORK WILL BE SCHEDULED
THERE GOES MY DOUBLETIME!
AFTER 20 YEARS!
LET'S FIGHT THIS!
WE'VE WORKED SUNDAYS FOR 20 YEARS!
WE DON'T NEED YOU GUYS ON SUNDAYS
SUNDAY WORK IS NO LONGER ESSENTIAL!
THESE MEN ARE ENTITLED TO IT BY PRECEDENT
ARBITRATOR'S DECISION
YES, COMPANY HAS THE RIGHT TO ELIMINATE SUNDAY WORK. SCHEDULING OF WORKWEEK IS A MANAGEMENT FUNCTION.
Based on a 1959 New Jersey Decision

Japanese Wheat Market Importance To Idaho Stressed

REXBURG, IDAHO—The Japanese wheat market is especially important to the people of this area because almost all of the U.S. wheat which Japan imports comes from the western states, Dick Smith, Madison County commissioner, stated in a speech to the Rexburg Kiwanis Club recently.

Mr. Smith said the cost of transporting wheat from the middle west to the coast makes it impractical for the states located in that region to export to Japan. He is a member of the Idaho State Wheat Commission and recently returned from a trip to Japan which was made for the Foreign Agricultural Service of the Department of Agriculture.

Mr. Smith said his group was able to obtain commitments which would likely result in an increase in the importing of U.S. wheat. Japan imports over 55 million bushels of wheat each year but has entered into trade agreements with Australia and Canada which have resulted in a significant decline in imports of wheat from our country, he added.

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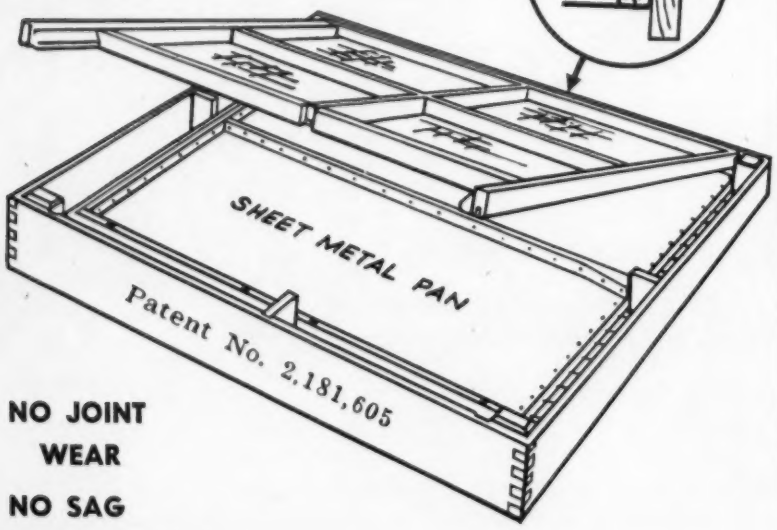

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NO SAG
LAST LONGER

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USE ON ANY SQUARE STACK SIEVE SIFTER

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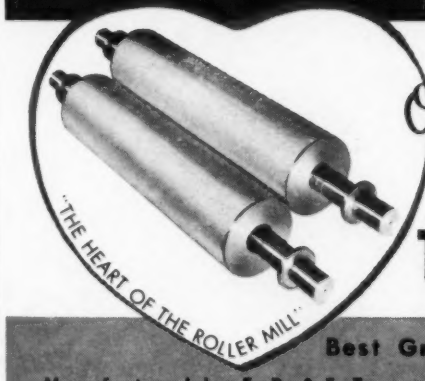

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Wheat Development Officials to Check Activity in Europe

HUTCHINSON, KANSAS—W. W. Graber, administrator of the Kansas Wheat Commission, and Otis Tossett, chairman of the North Dakota Wheat Commission, left recently for Europe where they will evaluate wheat market development activities and consider future plans. The two officials will spend five weeks in eight European countries including The Netherlands, Switzerland, Italy, Austria, England, Spain, Belgium and West Germany.

Mr. Graber and Mr. Tossett will spend several days at the Rotterdam office of the Great Plains Wheat Market Development Assn. where they will review programs designed to boost U.S. exports to the European market.

In England, they will meet milling officials in discussions about qualities of U.S. wheat imports, shipping problems, and programs to increase consumption of wheat products. In Belgium, Switzerland, Spain, and Austria, the two officials will explore ways of regaining markets for U.S. wheat.

Conferences with members of the German wheat team who visited the Great Plains in 1959 are scheduled in West Germany. And in Italy, there will be meetings with representatives of the pasta industry to discuss ways of increasing the use of Great Plains wheats in their products.

The inspection trip is being made in cooperation with the U.S. Department of Agriculture's Foreign Agricultural Service which is making foreign currencies available for the overseas travel. The Great Plains Wheat Market Development Assn. which Mr. Graber is representing on the trip is supported jointly by the Kansas Wheat Commission, the Kansas Association of Wheat Growers, the Nebraska Wheat Commission, the Nebraska Wheat Growers Assn., and the Colorado Wheat Administrative Committee.

—BREAD IS THE STAFF OF LIFE—

Canada Ships Record Breakfast Food Total

OTTAWA — Factory shipments by Canada's prepared breakfast foods industry were valued at an all-time high of $35,901,000 in 1958, up 10.4% from 1957's previous peak of $32,527,000, according to the annual industry report of the Dominion Bureau of Statistics. Nineteen establishments (17 in 1957) employed 1,348 persons (1,402 in 1957), and paid them $5,235,000 in salaries and wages ($4,985,000 in 1957). They also spent $13,862,000 for materials ($13,353,000 in 1957).

Shipments of ready-to-serve prepared breakfast foods increased in 1958 to 89,546,000 lb. (valued at $29,195,000) from 85,735,000 lb. in 1957 ($26,613,000) and unprepared breakfast cereals to 9,709,000 lb. ($1,206,000) from 8,823,000 lb. ($1,202,000). Shipments of prepared flour, cake and pastry mixtures advanced to 13,969,000 lb. ($2,297,000) from 13,878,000 lb. ($2,043,000), and hominy feed and other stock feeds to 15,100 tons ($787,000) from 12,800 tons ($680,000).

All other products and by-products were valued at $2,416,000 compared with the preceding year's $1,986,000.

Canadian Scientists Study Oilseed Species

WINNIPEG — Two new species of oilseed plants, distantly related to rape, are being studied by Canadian agricultural scientists who feel they can be adapted to the climatic conditions of this country.

The two species are Crambe and Camelina, reports A. G. Plessers, genetics and plant breeding institute, Canada Department of Agriculture, Ottawa.

Crambe has been tested extensively and has out-yielded rape and flax in many locations, although the oil content is slightly less than in rape, Mr. Plessers said.

However, the oil of Crambe has a much higher content of erucic acid and its use is consequently restricted.

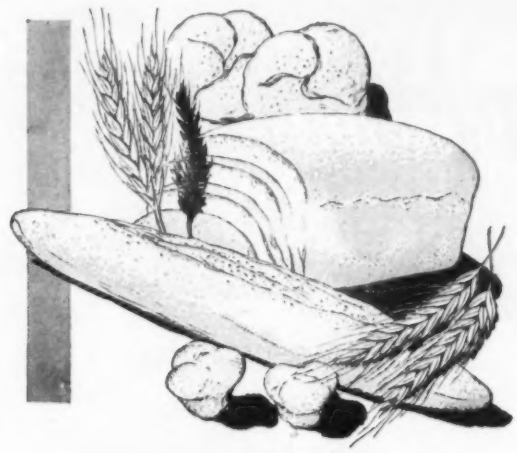
Camelina's particular value is that it has a shorter growing season than flax and matures readily in northern areas, where flax is frequently damaged by frost. It compares favorably with flax in yield and oil content. A disadvantage is the small size of its seed, he said.

Omaha Grain Men Re-elect Officers

OMAHA, NEB.—Following a meeting of the board of directors of the Omaha Cash Grain Commission Merchants Assn., the following officers were reelected:

C. H. Holmquist, Holmquist Elevator Co., Omaha, president; J. J. Sullivan, B. C. Christopher & Co., Omaha, vice president, and William C. Davison, Butler-Welsh Grain Co., Omaha, secretary-treasurer.

FLOUR FOR MAN'S BREAD*



A Brief History of Milling and Baking by SCIENCE WRITER

CHAPTER XXV *Enrichment Up-To-Date (Part I)*

A Backward Look

Enrichment of white flour and white bread with vitamin B_1, vitamin B_2, niacin and iron did not spontaneously spring into being. It resulted from a series of events: from experimentation and discovery, from industry-wide study and agreement, and from governmental actions—all of which led to enrichment as the logical conclusion.

Below are briefed a number of these happenings, arranged in chronological order:

- *Item:* The need for vitamins in maintaining good health was established in the second decade of this century;
- *Item:* Roller milling, which made such an increase in the production of refined white flour, had a serious drawback nutritionally because important vitamin values of the wheatberry were lost in processing;
- *Item:* Many nutritionists and physicians felt that the public health was not well served, because vital nutrients present in the natural wheat were not carried through to consumers;
- *A predicament:* Millers and bakers, on the one hand, had the great public demand for white flour and white bread; and, on the other, had pressure from diet experts for better nutritional value. Leaders in the milling and baking industries were responsive to the situation. Much thought was given to the problem, and many avenues were explored. For instance:

In the 1920's and 30's

- The *idea* of using a vitamin to fortify flour or bread dates back to the 1920's, when some millers and bakers added vitamin D to their foods;
- In the early 1930's, some mills made an effort to retain a higher vitamin "B" content in their white flour through undermilling;
- By the mid-Thirties, thiamine (vitamin B_1), and riboflavin (vitamin B_2) were successfully synthesized. Production of these vitamins, and of niacin, in commercial quantities soon followed.
- *Item:* During 1936 one of the largest of American millers explored the possibility of restoring vitamin B_1 (thiamine) to its white flour.
- In 1939 the Council on Foods and Nutrition of the American Medical Association officially encouraged the "restorative" additions to white flour and white bread of thiamine (vitamin B_1), riboflavin (vitamin B_2), niacin (a member of the vitamin "B" complex), and the minerals, iron and calcium. By the time of this pronouncement, the addition of vitamin B_1 to white flour and white bread was well under way as an industry practice, limited only by its cost.
- The Food and Nutrition Board of the National Research Council was formed the following year. It, too, supported the idea of using vitamins and minerals in white flour and white bread.
- In 1941 a national meeting of bakers and millers in Chicago, and the National Conference for Defense endorsed enrichment. Within a year, practically all leading U. S. millers and bakers were "enriching" their foods.

"Enrichment" Defined

As used in the milling and baking industries and in the Definitions and Standards of Identity of the U. S. Food and Drug Administration, the word "*enrichment*" has a specialized meaning. It refers specifically to the addition of certain vitamins and minerals in stated amounts to cereal foods. These are:

Thiamine (vitamin B_1)—*required*
Riboflavin (vitamin B_2)—*required*
Niacin (in the "B" family)—*required*
Iron—*required*
Calcium—*optional except in the case of self-rising flour, in which it is required.*
Vitamin D—*optional*

If a cereal food does not have the *three* "B" vitamins plus iron it cannot properly be called "*enriched*".

During processing, cereal foods may unavoidably lose natural vitamin and mineral values. When the manufacturer adds to the processed food enough of a vitamin or a mineral to equal the amount present before processing, he is using "*restoration.*" When the manufacturer adds *more* of a vitamin than is present in the food before processing, it is known as "*fortification*" and may be used to give greater nutritional value to a food. Fortification may also include the addition of substances not present before processing. Enrichment was originally thought to be "restoration" but in light of subsequent findings about the amounts of riboflavin used, "fortification" is more accurate.

The final chapter in this series, titled: "Enrichment Up-To-Date" (Part II) will be published soon.

*Based on the book with the same title by John Storck and Walter Dorwin Teague, this series has been made possible by the cooperation of the copyright holder, the University of Minnesota.

Reprints of these articles are available without charge for reference or educational purposes. Please send your request to the Vitamin Division, Dept. of Education, Hoffmann-La Roche Inc., Nutley 10, N. J. In Canada: Hoffmann La Roche Ltd., 1956 Bourdon Street, St. Laurent, Montreal 9, P. Q.

Enriched with vitamins and iron for better nutrition

ROLLER MILLS

(Continued from page 1a)

equipment. Be sure that your roll corrugator has complete facilities for truing journal centers and journals so that concentric grinding can be assured. If journals are worn excessively, have them built-up with hard abrasion resistant weld and reshaped, or completely replaced. Also be sure that gears are cut to correct size for reduced roll diameters.

When shipping your rolls for recorrugating take care in crating them to avoid unnecessary damage. We recommend building a crate in two sections, using ¾ in. rough lumber for the framework. Four heavy blocks cut out for shafts, should be used to prevent shifting of the roll during shipment. If these blocks are nailed to the framework and the crate tightly strapped with metal bands, no shipping troubles should be experienced.

Another important precaution to take when shipping rolls is the proper identification of each one. Be sure that each roll is individually tagged and identified, and that complete instructions for regrinding and recorrugating are included. Your roll corrugator needs this information.

1. Which is the right and which is the left hand roll? To determine this, stand in front of the machine. As you face the machine, the rolls will lie as diagrammed on a typical roll tag shown below.
2. How many corrugations per inch? Mark this clearly in the appropriate spot on the tag.
3. What type corrugation? Although it is not absolutely necessary to indicate this unless your corrugations are special and might be confused with a standard one, it is always helpful to have this information.
4. The spiral. Please state this clearly in inches per foot.
5. How the roll should run. It is important that your recorrugator know whether the rolls are to run sharp to sharp, dull to dull, sharp to dull or dull to sharp.

Roller mills are precision equipment, but to get high yield and a top quality product it is important that your rolls be checked periodically and kept in good condition.

——BREAD IS THE STAFF OF LIFE——

High School Youth Wins Colorado Contest

GENOA, COLO.—Denis L. Kjoness, a Genoa high school student, was named winner of the junior milling and baking championship at the Colorado Pure Seed Show.

For winning the championship, the Genoa Mile-Hi 4-H Club member will receive a year's free tuition at Colorado State University. It will be paid by the Colorado Grain, Milling & Feed Dealers Assn., which sponsors the contest.

Young Kjoness' sample of Cheyenne wheat was one of 90 entries submitted in the contest by Colorado 4-H and Future Farmers of America members. The winning entry scored 188 out of a possible 200 points.

In the contest, the wheat samples were judged on the basis of their milling and baking qualities. The entry deadline was set for Oct. 1; then the samples were put through extensive laboratory tests to determine the baking qualities, mixing strength, percent extraction (the amount of flour the sample yielded) and percent protein.

The youth's sample came from his Mile-Hi 4-H Club wheat project, of which Lincoln County agent Don Knowlton was in charge.

Second place in the contest went to "Busy-Bee" 4-H Club member Shirley Coleman, Meeker, in Rio Blanco County where Bill Ball is the county agent. Her entry was also a sample of Cheyenne wheat.

Third place, with a Comanche wheat sample, was achieved by "Happy Go Lucky" 4-H member Linden Wells, Arapahoe, Cheyenne County, where Bert Panson is county agent.

Robert M. Esdale

APPOINTMENT—Robert M. Esdale, formerly assistant chief of the Grain Division, Agriculture and Fisheries Branch, Ottawa, has been appointed to succeed Dr. S. C. Hudson, who has been named executive secretary of the International Wheat Council with headquarters in London, England. Mr. Esdale joined the department in 1946.

PRATER ROTARY FEEDER
Installations FOR DUST CONTROL, VOLUMETRIC FEEDING AND PNEUMATIC CONVEYING

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Bay State Milling Co.
Dixie Portland Flour Mills
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General Foods
General Mills, Inc.
Huron Milling Company
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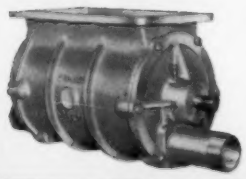
Iglehart Bros.
International Milling Co.
King Milling Co.
Lewis Bros. Bakery
Ogilvie Flour Mills Co.
Pillsbury Company
Ralston Purina Co.
Richmond Baking Co.
St. Louis Flour Mills



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Norfolk Export Position 'Desirable,' Says Cargill Manager

NORFOLK, VA. — The Tidewater area with Norfolk as its primary port is "in a very desirable position" for profitable grain production and grain export, according to Benjamin S. Jaffray, southeastern regional manager of Cargill, Inc.

Mr. Jaffray told a meeting of the Sertoma Club here recently that "production successes of other areas and grain export successes of the St. Lawrence Seaway and the Gulf should have little effect on Norfolk or the farming potential of Virginia, Maryland, Delaware and North and South Carolina. This port's activity in the crop year beginning June 1, during which it has become the leading exporter of grain on the Atlantic coast, tends to be proof of this. Norfolk and its surrounding area are in a league virtually all their own."

The grain man, whose firm operates in South Norfolk a recently expanded 4½ million bushel export elevator and a newly built soybean processing plant to handle 7 million bushels yearly, pointed out that the five states' soybean production has increased 400% in 10 years. "Corn production has also climbed, and now makes up a significant part of Norfolk's exports, and wheat, oats and other grains are becoming more important yearly."

Changing Technology

Mr. Jaffray attributed the change in production patterns to "changing technology plus governmentally controlled acreages and prices that have caused production of cotton, tobacco and peanuts to decline." He said, "This area's tobacco producers are the most efficient in the world, yet high price supports are causing them to lose world markets and are encouraging other countries to expand tobacco production. Similarly high supports and restricted acreages have speeded decline of the cotton industry while encouraging development of synthetic fibers and of competitive overseas cotton production."

Mr. Jaffray said that in grain also the 23-year-old crop support program "has failed, and must be replaced." He urged realistic aid to needy farmers who are by-passed by the present program, and a return to free market determination of crop prices to "end publicly-owned surpluses, publicly-paid subsidies and publicly-burdensome storage costs and to lead to enlarged domestic and foreign markets for U.S. grains."

——BREAD IS THE STAFF OF LIFE——

Enid Firm Charged With Mis-Labeling

OKLAHOMA CITY — Johnston Seed Co., Enid, has been charged with mis-labeling rye and wheat seed shipments. The complaint charged that one shipment of 252 bags of seed mixture, shipped from Crescent, Okla., to Leachville, Ark., in September, 1958, was labeled 97.66% rye and 1.34% inert matter. The government claims the shipment should have been labeled 70.06% rye, 3.39% inert matter and 25.25% wheat. In another shipment of 186 bags of wheat seed, a label indicated the seed was capable of 90% germination, when the government claims it should have been labeled 57% germination. The government asks a $2,000 fine be assessed against the seed firm.

Agricultural Attache Named at Stockholm

WASHINGTON—The U.S. Department of Agriculture has announced appointment of Harry R. Varney, Shelburne, Vt., as agricultural attache at Stockholm. He succeeds Harald Larsen who has returned to Washington for reassignment in USDA's Foreign Agricultural Service.

Dr. Varney has been agricultural attache at Djakarta, Indonesia, since 1957. He was dean of the College of Agriculture, Forestry, and Home Economics and director of the Agricultural Experiment Station at West Virginia from 1950 to 1957, and from 1947 to 1950 served in similar capacities at the New Mexico College of Agriculture and Mechanical Arts.

Dr. Varney previously served as director of the experiment station and extension service at the University of Vermont, as a county agricultural agent in Vermont, and as a senior marketing specialist with the Agricultural Adjustment Administration. He has a farm near Shelburne.

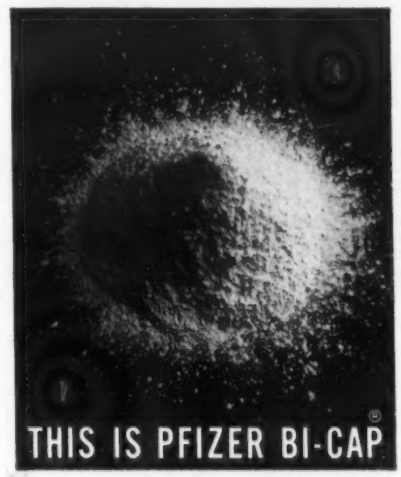
A native of Bristol, Vt., he holds bachelor's and master's degrees in agriculture from the University of Vermont, and a doctor's degree in agriculture and economics from Cornell University.

Plant to Be Closed

TECUMSEH, MICH. — The macaroni division of the Quaker Oats Co. plant here 43 years will be closed by June 30 due to marketing problems, Donald R. Nixon, manager, announced.

The 23 employees will receive severance pay. Each employee will get one week of salary for each year of service up to 20 years. Those with more than 20 years will get two weeks pay for each year over 20.

Mr. Nixon said the plant, which manufactured macaroni, spaghetti and noodles, will close due to marketing problems which have made distribution economically unsound.



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DURUM AWARD—Durum wheat credited with winning top honors at the North Dakota State Durum Show at Langdon, N.D., is being sampled by Robert M. Green, Palatine, Ill., director of the National Macaroni Institute. Watching Mr. Green's inspection of the prize-winning sample is the new "Durum King of North Dakota," Wallace Lee. Mr. Lee farms 320 acres in Walsh County, N.D., where he raised 55 acres of 63 lb. test weight Ramsey durum last year.

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U.S. Growers Help India with Small Industries Show

WASHINGTON — The U.S. Small Industries Exhibition, representing the combined efforts of the American government and private enterprise, was inaugurated recently by the governor of Bombay, Sri Prakas at Bombay, reports Joseph Spiruta, director of the New Delhi, India, office of Western Wheat Associates. American wheat growers, represented by Chester B. Stonecipher, Waitsburg, Wash., were among three U.S. farm commodity groups taking part in the month-long show.

Ellsworth Bunker, American ambassador in India, welcomed Gov. Prakas and other prominent Bombay residents to the special preview and formal opening. Mr. Stonecipher hosted the governor at the wheat exhibit, where keen interest was shown in the small bread bakery, demonstration kitchen and doughnut machine. Bread, hotcakes and doughnuts were being demonstrated and made available for sampling. Gov. Prakas tasted the American doughnut.

Mr. Stonecipher, wheat, pea and cattle rancher farming near Walla Walla, Wash., is presently chairman of the Washington Wheat Commission and a board member of Western Wheat Associates, U.S.A., Inc. He was selected by the U.S. government to be a member of the agricultural mission to the exhibition. Mr. Stonecipher has devoted his time in discussions with business people interested in starting small baking industries similar to those on display.

Housed in four geodesic domes occupying six acres, the exhibition included more than thirty functioning small industry units which range from automobile tune-up to cake baking. There is also a solar plateau and a film theatre.

Four teams of America specialists—trade, labor, technical and agriculture—were available in an advisory and consultive capacity. American farm groups, such as the wheat growers, use overseas trade fairs to promote increased use of wheat and a better understanding of the American way of life. Western Wheat Associates has participated in three similar exhibitions in India during the past 18 months.

——BREAD IS THE STAFF OF LIFE——

PFAA Payments Second Highest in '58

WINNIPEG—Payments made to grain growers in western Canada with respect to the 1958 crop under the Prairie Farm Assistance Act totaled $23,103,463 for 82,497 awards, according to latest advices from Ottawa. This was the second highest disbursement since 1939 when PFAA was enacted to provide assistance to farmers who had crop failures. In 1954, payments amounted to $33,000,000. In 1958 there were 48,032 awards totaling $14,999,630 paid in Saskatchewan; 27,789 totaling $6,801,756 in Alberta; 6,022 totaling $1,167,341 in Manitoba, and 654 amounting to $134,735 in the Peace River territory of British Columbia.

Grain farmers in the PFAA area contribute to the crop failure payments through a levy of 1% on grain marketed from the area. The balance comes from federal funds. The 1958 levy which amounted to $6,674,000 was made up of $3,803,745 from Saskatchewan; $1,861,242 from Alberta, and $1,009,011 from Manitoba. The sum of $6,114,474 was raised by levy the previous year.

Almost $5 million of the $6,674,000 levy was produced from wheat sales. The remainder came from barley, oats, flaxseed, rapeseed and rye. PFAA administration expenses came to $733,409 and were met by the federal government.

Arthur E. Schenck

MANAGER—Arthur E. Schenck has been named sales service manager of the East Pepperell bag manufacturing plant, Bemis Bro. Bag Co., announced W. I. Rodgers, manager. In making the announcement, Mr. Rodgers stated Mr. Schenck will be responsible for all sales activities and training within the East Pepperell delivery territory which includes the New England and East Central states. Mr. Schenck, who joined Bemis in 1943 at the company's New York general sales department as a sales trainee, has served since 1953 as an executive general salesman in that division. From 1943 to 1949 he was a sales engineer and during 1949 to 1952, sugar bag sales specialist.

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Scientists Developing U.S. Soybeans To Meet Taste Requirements in Japan

WASHINGTON—Ezra Taft Benson, secretary of agriculture, has announced developments by USDA scientists offering new possibilities for making high-quality miso and tofu —traditional Japanese foods—from U.S.-grown soybeans. These developments, the secretary said, could open a larger part of an expanding soybean market in Japan to U.S. beans.

Soybean investigations relating to miso production, conducted by USDA's Agricultural Research Service, showed that the use of soybean grits, produced by cracking the beans and removing the hulls, is the key step to an improved process. The hulls, or seed coats, themselves have little value for food, and their removal eliminates the greatest single cause of unsuitability of some U.S. soybean varieties for miso production.

Improved Process

The improved process cuts in half the fermentation time normally required in processing soybeans for miso, reduces soaking and cooking times, removes the hila or "eyes" that cause dark spots in miso, and increases protein content and uniformity of the food output. Most important of all, miso made by the improved process has proved equal in quality to the product traditionally made by the Japanese.

In companion studies, U.S. soybean varieties were evaluated for tofu production. Some were found equal to Japanese varieties for tofu, and a number of others were found that may also be acceptable.

Miso and tofu are both staples in the Japanese diet—important sources of protein in a nation where meat supplies are limited. They account for about half the soybean consumption in Japan, with miso alone making up about 20% of the total. In a plan to improve the population's protein intake, Japan expects to increase soybean consumption some 40% in the next 10 years, much of it as miso and tofu. U.S. Agriculture officials are looking to this source for expansion of U.S. soybean exports.

At present the Japanese—to whom this country exports about 35 million bushels of soybeans a year—use the U.S. beans mainly for oil extraction.

Japanese food processors have objected to U.S. beans in food processes involving whole beans because they absorb water, and cook and ferment more slowly and unevenly than Japanese beans. Developed primarily for oil content, high yields, mechanical harvesting and handiing and other characteristics rather than for processed foods, U.S. soybeans also have other qualities undesirable to Japanese food producers, such as dark hila or eyes which leave dark specks in the finished foods. The new USDA research developments should overcome most of these objections.

Research Work

The work on miso and tofu, carried on at the ARS Northern Utilization Research and Development Division in Peoria, Ill., has been part of a market development program in which the Foreign Agricultural Service and the American Soybean Assn. are cooperating. It has been under the leadership of A. K. Smith and C. W. Hesseltine.

Working cooperatively with USDA researchers were Japanese scientists Kazuo Shibasaki, on leave from Tohoku University, Sendai, Japan, and Tokuji Watanabe on leave from the Japanese Ministry of Agriculture and Forestry.

Additional Background

Miso is a paste used by the Japanese primarily in soup. It may be light, medium or deep brown in color, and is similar to soy sauce in flavor. Miso is traditionally made by soaking whole soybeans, cooking them for 1 to 2 hr., adding salt, water, a yeast starter, and fermented rice. This mixture is then fermented for 45 days to as long as a year. Miso is generally eaten by the Japanese twice a day.

Tofu, also known as soybean curd, is made by soaking and wet-grinding the whole bean, cooking and filtering the ground product to produce an emulsion, and adding calcium sulfate to the emulsion to coagulate the protein and oil. This is then molded into a soft, white cake that is 6% protein, 3.5% fat, and most of the remainder water. It is used in soup or fried in deep fat to make aburage, or otherwise processed to make a so-called "frozen" tofu.

——BREAD IS THE STAFF OF LIFE——

PLANS EXPANSION

JEWELL, OHIO—The Jewell Grain Co. here has announced a $56,000 expansion recommended by the board of directors and approved by the firm's stockholders. The expansion program includes remodeling of the present structure and the addition of three 18 ft. by 60 ft. grain elevators, each with a capacity of 10,000 bu., and a new 750 bu.-an-hour grain dryer.

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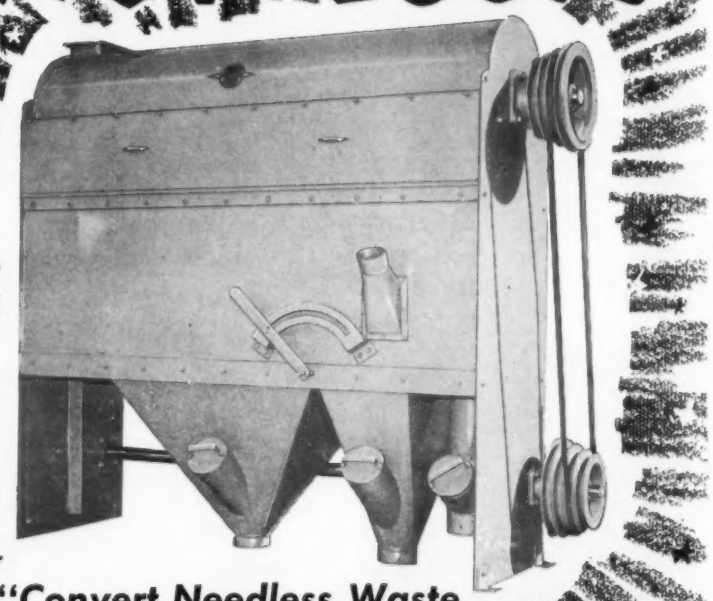

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Scale Model of Tapioca-Macaroni Plant Displayed at New Delhi Fair

NEW DELHI, INDIA — Buhler Bros., Uzwil, Switzerland, is displaying a scale-model of an industrial tapioca-macaroni plant at the World Agriculture Fair, here.

The installation consists of a peanut processing plant, wheat flour mill, tapioca-flour mill, mixing plant, continuous paste goods production and storage and packaging facilities.

Daily capacity of the plant is rated at 40,000 lb. tapicca-macaroni and 8,000 lb. wheat macaroni daily.

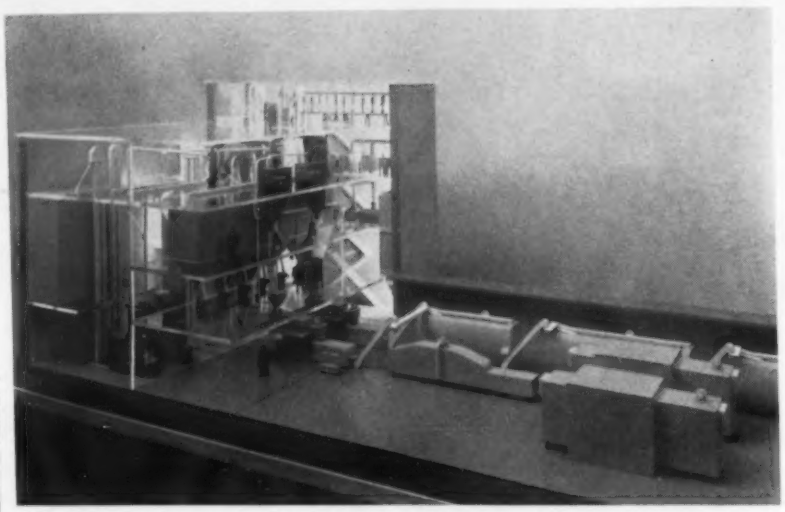
For some time, a "Buhler" pilot plant in Mysore (India) has produced up to 2,000 lb. of tapioca-macaroni daily.

Tapioca-macaroni is a foodstuff of high nutritive value. It is mechanically made from a mixture of tapioca-flour, of protein-rich peanut meal and of wheat-flour or semolina. The tapioca-macaroni has about 10% protein, is nearly twice as nutritious as natural rice and contains large quantities of minerals and vitamin B, according to a Buhler report.

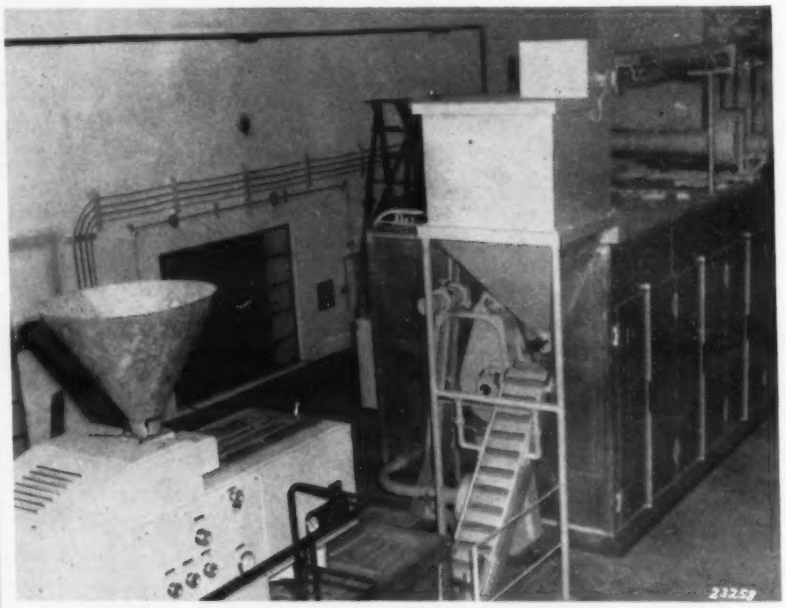
India faces the daily problem of having to feed about 390 million persons. Under the light of advanced food research, the conventional meals seem to be low on calories and generally without enough variety. The Indian government has therefore supported the efforts of the Central Food Technological Research Institute Mysore to develop a rice-meal with nutritive value. A visit of Dr. D. S. Bhatia with Buhler Bros. at Uzwil and a study of the problem made by the Swiss food technologist Dr. Ing. Hummel, resulted in the building of the pilot plant at Mysore. Ever since, many tons of tapioca-macaroni have been distributed on a trial bas's to the people in the State of Kerala, and the response has been quite enthusiastic. Tapioca-macaroni can be cooked like ordinary rice and it, too, can be prepared as a tasty meal. These factors were most responsible for the great success of the field tests, it is noted.

Manufacturing processes in the scale model plant include: Peanut meal: Selected peanuts are slightly roasted and pressed. The extracted oil is used for other purposes, whereas the remaining cakes with some fat content are ground. Capacity is about 44,000 lb. daily. Wheat-flour or wheat-semolinas: A normal flour mill with 3-floor layout and pneumatic handling of mill stocks, produces about 350 cwt. flour daily. Tapioca-flour: 25,000 lb. per day. Cooked, cleaned and dried tapioca chips are ground to flour. Mixing plant: Peanut meal, wheat-semolina and tapioca-flour are stored in bins above the mixing plant. Continuous production plant: The blend is mixed with water. This dough is then kneaded under special conditions and continuously pressed through a die. Heating and drying process follows. Capacity is 40,000 lb. tapioca-macaroni daily plus about 8,000 lb. conventional wheat macaroni.

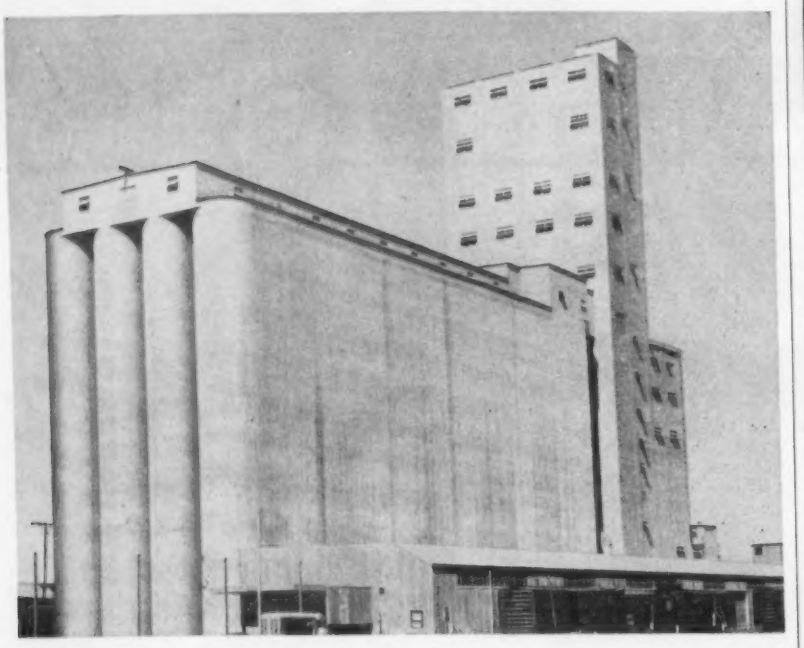
This new kind of food for human consumption has attained considerable interest, it is reported. Prime-Minister Nehru has personally visited the "Buhler" pilot plant at Mysore. The scale-model at the World Agriculture Fair shows the way from this pilot plant to a large commercial unit.



SCALE MODEL—Pictured is the scale model of the Buhler tapioca-macaroni plant on display at the World Agriculture Fair. On the left is the peanut processing plant. The center rear is the wheat flour mill, and center foreground the tapioca flour mill and mixing plant. On the right is the continuous production plant for tapioca-macaroni and conventional wheat macaroni.



PILOT PLANT—A section of the Buhler Bros. pilot plant at Mysore, India, for tapioca-macaroni manufacture.



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Machine in Use For Extracting Protein Powder

LONDON—A British company is now operating a prototype machine for extracting protein powder from vegetable matter. The process, known as I.P.P. (Impulse Process Protein), is considered important because of its economic potential for undernourished people in underdeveloped areas where protein deficiency is a serious problem. It has been estimated that it would cost only about 2½¢ a week to provide one person with two ounces of the protein powder—all the protein needed to keep him in good physical condition.

In the I.P.P. process, nothing is wasted, according to the inventor. The protein, for the first time fit for human consumption, and described as a colorless, tasteless fine powder, is suitable for sprinkling on or mixing with food.

A small proportion of chlorophyll syrup containing all the carotene from the grass is also extracted. This is expected to have great possibilities in the hands of the compounders as a feed concentrate for poultry or livestock.

Finally, even the discarded fiber, the goodness drained out of it, is usable for fuel, or in the papermaking or board manufacturing industries.

In theory the process can tap with equal effect the protein in any vegetable matter—grass, lucerne, leaves, ferns, peanuts, alfalfa, even weeds.

Years of Research

The attempt to extract protein in bulk from leaf material has been going on in Britain for more than a decade. The $84,000 prototype of the machine now working in London was designed by a British chemicals company. Central element of the design is the impulse renderer. This produces shock waves at the rate of 35,000 per minute through a stream of water carrying the vegetable matter.

In the I.P.P. process, leaf material and alkaline water are fed together into the machine. The fiber is then separated from the protein solution by means of a vibrating screen, the beaters in which move with a linear velocity of 22,000 ft. a minute. The fiber falls into a washing tank. Squeezed dry, it provides the raw material for paper or board-making.

Meanwhile the protein solution has passed into a precipitation tank, and from there into a high-speed centrifuge. After further operation in a basket-type centrifuge it arrives at a tank for separating solvents. From one end of this tank comes the pure protein, from the other the humanly unpalatable carotene material containing chlorophyll, hormones, sterols and vitamins.

A somewhat different operation using peanuts and water produces, besides the protein, meal suitable for cattle food and various oils.

Innumerable varieties of raw material can be treated by the process, it is claimed, but each variety has its own peculiarities involving modification of the machine, so that a great deal more research needs to be done to discover how best it can be used to provide food for human consumption from whatever vegetation is at hand in each particular area.

Seaway Brings In New Diseases For Plants, Animals

MINNEAPOLIS — Opening of the St. Lawrence Seaway brought more than 1,000 vessels from 43 foreign countries into the heartland of America last summer. And more than 150 million people with their luggage entered the United States from foreign countries during 1959. They came by ship, airplane and, from Mexico and Canada, by land vehicles. Thus U.S. crops and livestock were exposed to plant and animal diseases and insects not then present in our country.

Because of this danger the Rust Prevention Assn., through its executive secretary, Donald G. Flechter, is urging the strengthening of plant and animal quarantine staffs at all international ports of entry.

It is pointed out by Mr. Fletcher that within a few months after the Seaway opened, the Khapra beetle, world's worst pest of stored grain, was intercepted at Cleveland, Ohio. Prior to this appearance, the beetle had already gained entrance to the southwestern United States where $6 million has been spent since 1953 in an effort to bring it under control. "Contrast this outlay for one control program with the approximately $1 million needed to strengthen the inspection force of USDA's Plant and Animal Quarantine Divisions," says Mr. Fletcher, "and it becomes apparent that the investment in protection is a reasonable one."

Foreign Pests

Among foreign pests and diseases brought into the U.S. from abroad, some of the most destructive have been the boll weevil of cotton, brucellosis, foot and mouth disease, European corn borer, Dutch elm disease, Mediterranean fruit fly, witchweed of corn, soybean cyst nematode, golden nematode of potato, Japanese beetle and gypsy moth.

"Attempts to control introduced diseases or insects have often cost much more than strengthening port of entry inspection service will cost in the foreseeable future," Mr. Fletcher points out, "so we are asking others interested in protecting America's food supply to join in urging the Congress to provide the $1 million needed to expand the plant and animal guarantee inspection force."

—BREAD IS THE STAFF OF LIFE—

WHEAT PRODUCTION DOWN

BUENOS AIRES, ARGENTINA — Wheat production in the Argentine for the 1959-60 season has been officially estimated at 5,560,000 metric tons. This is a decrease of 17% from the previous year in all areas except Cordoba and La Pampa, according to the Canadian Commercial Counsellor.

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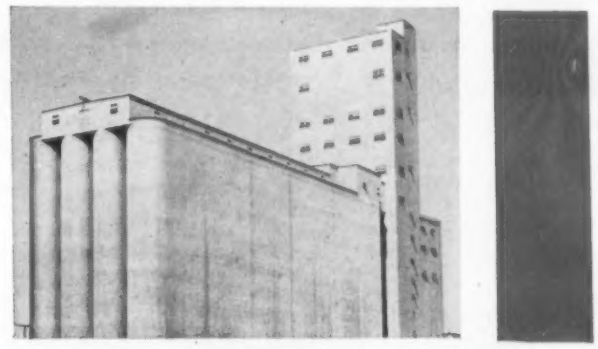
Hercules Official Addresses Group

MINNEAPOLIS — Donald Dubois, bakery service manager for Hercules Powder Co. of Harbor Beach, Mich., recently talked to the students at the Dunwoody School of Baking of The William Hood Dunwoody Industrial Institute here, on the advantages of using vital wheat gluten in breads and wheat starch for cakes.

Mr. Dubois used a series of slides showing the improvement in volume and moisture retention in rye bread, wheat bread, raisin bread and hamburger buns when 2 to 4% of vital wheat gluten was added to the dough. It was brought out that in bakeries where bulk handling of flour is used, wheat gluten may be added to the standard patent flour to replace clear flour for specialty breads. Replacing part of the cake flour with wheat starch in angel food and sponge cakes was recommended for improving volume and tenderness.

Judging by the number of questions asked there was a great deal of interest shown in these new baking ingredients.



SIMON-CARTER milling equipment used throughout PILLSBURY MILL

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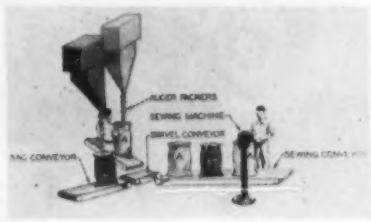
New Services
New Literature

This reader service department announces the development of new and improved products, new services and new literature offered by manufacturers and suppliers. Claims made in this department are those of the firm concerned. Use the accompanying coupon to obtain the desired information.

No. 2178—Bagging Rate Doubled

A system which, it is claimed, in extensive field tests has enabled two men to bag and sew up to 16 100-lb. bags of flour a minute has been designed and manufactured by Richardson Scale Co. Combined in the



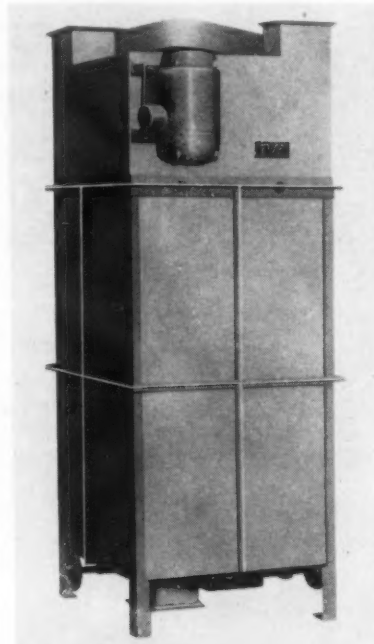
system are two flour packers and a Y-type arrangement (see drawing) of four flat belt bag conveyors. Company officials report that two men with this new system can produce as much as four men with the conventional system of individual packers and sewing stations. This high speed of operation is achieved with no sacrifice in accuracy, all bags being well within required tolerances. Actual heart of the system is a "swivel conveyor" which acts automatically to channel two bagging lines into a single sewing line. To do this, it shifts through three positions: 1. Inline to receive filled bags from first bag conveyor; 2. inline with sewing conveyor to discharge filled bag; 3. inline with second bag conveyor. Check No 2178 on the coupon, clip and mail for details.

No. 2169—Brochure on Dust Collectors

A new 16-page illustrated two-color brochure (Bulletin 1828) describing the American-Standard line of Series 342 dust collectors is now available from American-Standard Industrial Division. Included in the new bulletin is a list of typical industry applications, including those for food and grain processing. A cutaway photo is used to explain operating characteristics, and construction features are described and illustrated. A feature of Bulletin 1828 is a pair of nomogram presentations which are designed to simplify engineering calculations relating to Series 342 dust collectors. One nomogram is provided as an aid to quick and accurate collector selection; the other simplifies the determination of anticipated collector efficiency. An example problem is established and carried through to completion as a guide to selection and efficiency determination procedures. For details check No. 2169 on the coupon, clip and mail.

No. 2175—T-R Line Introduced

The Turner-Ross Companies have introduced a new line of specialized flour mill and feed equipment, manufactured by Ross Machine & Mill Supply Co., to be known as the T-R Line. One machine is a new patented square mixer, a revolutionary design of pellet cooler, shaker and scalper, which combines the effectiveness of the horizontal type with the compactness of the vertical or louver type



SQUARE MIXER

cooler. Also being introduced is the new T-R MonoRoll Cubing and Pelleting Machine from 25 h.p. to 75 h.p. with the basic machine being 25 h.p., the capacity of which is approximately 45 cwt. an hour. Other new units include the T-R crumbler, T-R extra heavy duty flaking mill and T-R all-aluminum minor floor-mounted single section sifter. Other items consist of the redesigned T-R roller mill for flour milling, with fully sanitized construction (dust and bug proof operation) streamlined cabinet, for use in both pneumatically and mechanically operated mills. It is anticipated that Ross Machine & Mill Supply will be in full production of the foregoing machines, in addition to its regular line, early in May. For details check No. 2175 on the coupon, clip and mail to this publication.

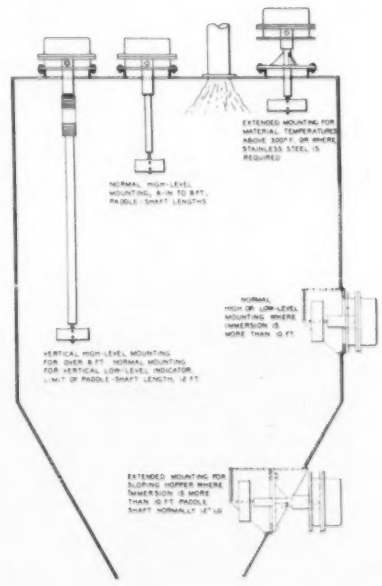
No. 2177—'Rope' For Insect Control

H. T. McGill has now made available its new "Bug-Rope" which can be pushed into bulk grain at strategic points where it is necessary to test the killing effectiveness of fumigants. The "Bug-Rope" is braided and flexible so that test cages of insects can be inserted, then the rope pushed into the grain, and later drawn out

to test effectiveness of the kill within the cages. Test cages containing the desired species are quickly inserted inside the braided "Bug-Rope" anywhere in its length, at any desired spacing. The "Bug-Rope" is then pushed into the grain with the push-rod, constant downward pressure securely moving the "Bug-Rope" deeper. When the push-rod is raised, it is instantly released, leaving the rope in the grain during fumigation. One operator with a push-rod can place "Bug-Ropes" in all vital points, it is claimed. For details check No. 2177 on the coupon, clip and mail to this publication.

No. 2174—Indicator For Material-Level

Fuller Co.'s material-level indicators are now designed for hazardous dust locations, as well as for general purpose use. The announcement was made upon approval by Underwriters' Laboratories, Inc., of the Fuller Model SG-4X for use on hazardous dust locations (Class II, Groups E, F and G). Model SG-4 is designed for all general purpose applications. The models are identical in operation and dimensions. They contain interchangeable parts and wiring, except that Model SG-4 contains a gasket between the cover and the body, while Model SG-4X has metal to metal surfaces and a paddle shaft bushing machined to UL specifications. Check No. 2174 on the coupon, clip and mail for details.



Typical applications of the Fuller Material-Level Indicator.

Send me information on the items marked:

☐ No. 2169—Dust	☐ No. 2178—Bagging
☐ No. 2170—Bulletin	☐ No. 2179—Classifier
☐ No. 2171—Scale	☐ No. 7749—Loader
☐ No. 2172—Sifter	☐ No. 7787—Dryers
☐ No. 2173—Tips	☐ No. 7790—Booklet
☐ No. 2174—Indicator	☐ No.7801—Service
☐ No. 2175—T-R Line	☐ No. 7802—Sack
☐ No. 2176—Bulk	☐ No. 9192—Conveyor
☐ No. 2177—"Rope"	☐ No. 9197—Machine

Others (list numbers) .....

NAME .....

COMPANY .....

ADDRESS .....

CLIP OUT—FOLD OVER ON THIS LINE—FASTEN (STAPLE, TAPE, GLUE)—MAIL

FIRST CLASS PERMIT No. 2
(Sec. 34.9, P. L. & R.)
MINNEAPOLIS, MINN.

BUSINESS REPLY ENVELOPE
No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY—

The Northwestern Miller

P. O. Box 67

Reader Service Dept. Minneapolis 40, Minn.

No. 2171—Scale Calibration Device

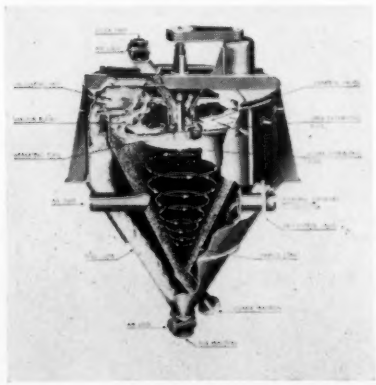
A new device designed to provide a convenient and time-saving method for checking the calibration of Toledo "electronic load cell scales" is announced by Toledo Scale, Division of Toledo Scale Corp. This new device allows the scale operator to quickly and easily verify the indicating accuracy of a load cell scale without the use of test weights. According to the company, the calibrating device is incorporated into all new Toledo electronic load cell scales during manufacture. At initial installation tests, it is set and locked at a voltage equal to full dial capacity. Thereafter, to determine if the scale is indicating accurately, it is only necessary for the operator to turn a test switch on the scale to the "calibrate" position. If the scale is correctly calibrated, it will indicate full dial. Check No. 2171 on the coupon, clip and mail for details.

No. 2172—Sifter Redesigned

Sprout, Waldron & Co., Inc., has announced a redesigned sifter for extremely high capacity accurate sifting of dry materials. The new "Super Sifter" design features square, tubular, horizontal cross members in the structural frame. The number of these cross members has been increased permitting the unit to operate under the most severe industrial requirements. According to Warren Walter, chief engineer of Sprout-Waldron's size classification division, the new design changes affect only the four and six section models. It affords greater metal to metal contact at welds and more bearing surface for the sieve frames. The new design requires a slight increase in floor space, but the height is unchanged. For details check No. 2172 on the coupon, clip and mail.

No. 2179—Milling Air Classifier

First schematics of the newly-modified Sturtevant Whirlwind Air Classifier, especially adapted for the grain processing industries, were released by Sturtevant Mill Co. The classifier is the heart of the newly-announced Sturtevant flour refining system, which permits economical production of flour to customer specifications, despite mill location in a strong or weak wheat area. The unit, like the total system, is marketed through the company's Grain Processing Division, Fostoria, Ohio. The classifier separates coarse, fine and superfine fractions. The low micron separation possible allows effective starch-protein shifting. The selective separation is made possible by the exacting control of air currents and centrifugal force, with simple adjustments in counteraction between the two forces allowing recovery of almost any desired particle size. Specific classifier volumes and sizes depend upon individual mill requirements. Check No. 2179 on the coupon, clip and mail for details.



No. 2173—Tips on Control Panel

Some important facts to be considered in designing an efficient control panel are discussed in a new four-page fact file offered by the Fuller Co. This bulletin is recommended as a suitable guide to anyone considering the use of any type of production control panel to solve a materials handling problem. Strategic location, good electrical and mechanical practices, codes and standards to be kept in mind, enclosures of various types and safety precautions are covered under separate headings. Some common oversights in design are cited, as are tips on specifying a control panel. Illustrated with photographs of two different types of panels and a graphic representation of a remote control system, the bulletin also includes a list of organizations that publish codes and standards relating to control panel design. For copies check No. 2173 on the coupon, clip and mail to this publication.

No. 2176—Bulk Scale Described

A fully automatic scale that weighs, discharges and records dusty, powdered, small-size granular materials, with no operating cost, is de-

She's Planning Tomorrow's Lesson
Around Your Enriched Products

Merck Enrichment Teaching Kit
helps build sales for your products

For Best Results
Specify Merck

This teacher is using an Enrichment Teaching Kit supplied by Merck. It stimulates her own interest in the contributions of enrichment—and helps her do a better job teaching good nutrition. The Kit consists of teacher's manual, colorful wall chart and student booklets which stress the importance of enriched flour, bakery and grain products in maintaining a balanced diet. Merck offers these Kits free of charge through ads in national teachers' magazines, has already sent hundreds of thousands to schools throughout the country. This Merck educational program works to your advantage by building increased consumer interest in the products that you enrich.

MERCK & CO., INC., Rahway, New Jersey

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scribed in a new product data sheet offered by the Richardson Scale Co. Designated HHH-38, this scale processes loads from 200 lb. to 600 lb. per discharge, providing extremely high weighing accuracy and operating rate with materials such as abrasives, chemicals, feeds, foodstuffs, grains and minerals. In addition, the data sheet contains a list of specifications and optional accessories as well as a scale drawing and a photograph. For copies of Product Data Sheet No. 5902 check No. 2176 on the coupon, clip and mail to this publication.

No. 7802—Plastic Shipping Sack

Owens-Illinois Glass Co. announced it will begin production of a heavy duty plastic shipping sack for industrial and agricultural products. Features, according to company literature, include strength, eye appeal and effective protection against moisture and contamination by foreign substances. The plastic bag will be of the extruded blown film type, and because a continuous plastic tube of any color can be printed with multicolor designs, an infinite variety of attractive packages can be made. For details, check No. 7802 on the coupon and mail.

No. 2170—Bulletin on Weighing System

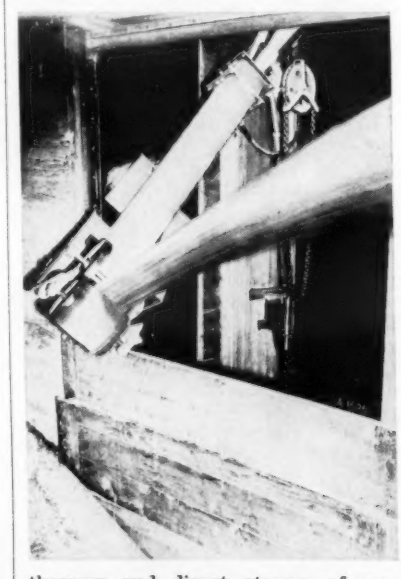
The Howe Load Cell Weighing System is the subject of a four-page brochure released by the Howe Scale Co. Typical heavy-duty applications, such as motor truck scales, railroad track scales, automatic batching, check weight scales, tank or hopper scales and crane hook scales are described and illustrated in the brochure. Features of the system, which is available for installations involving 500 lb. to hundreds of tons, are outlined. Detailed drawings and photos graphically describe the operation. For copies, check No. 2170 on the coupon and mail.

No. 7801—Bulk Truck Service

Productive Acres Manufacturing Co., Inc., has announced a service to help bulk truck owners get more use years out of their used bulk trucks. According to the company, the service helps stabilize a unit to the present used body, regardless of style, design or make. The firm has plants located all over the U.S., company literature said. For further information, check No. 7801 on the coupon and mail.

No. 7749—Box Car Loader

The "Swiveloader," designed to fill and trim the largest box cars quickly while eliminating dust for the operator, has been announced by Stephens-Adamson Manufacturing Co. The unit mounts to wall or structural supports. No loading platform or gang plank is required. The operator swings the unit inside the box car door and without entering, he can swivel the



thrower and direct stream of material toward one end of the car. The operator is free to attend to other tasks until one end of the car is filled, then he swivels the unit around and directs the stream to the other end without stopping the feed of material. It operates on a centrifugal action throwing principle. The standard unit is available in a 10 in. wide belt size. The "Hi-Type" unit is designed to be swung over three 20 in. high grain doors. It is available in 10 in. and 26 in. wide belt sizes. Check No. 7749 on the coupon and mail for details.

When the Mill Mutual man heads for your plant, here are some of the things he can do for you:

1. Look over policies to see if they give the insurance you need at the lowest possible net cost.
2. Inspect plant from top to bottom to see if all possible is being done to prevent loss — not only from fire but also from production slow-up or break-down.
3. Show how simple "preventive maintenance" records and follow up can reduce losses — and increase values, production and profits.
4. Show how personnel in plants large and small can be organized — all the way from a small committee to a fire brigade — to prevent loss.

The Mill Mutual man is one of a hundred fieldmen and engineers day by day visiting mills and elevators nationwide, wherever grain is stored or processed.

They represent:

AMERICAN MANUFACTURERS MUTUAL INSURANCE COMPANY, CHICAGO, *Est.* 1837;

GRAIN DEALERS MUTUAL INSURANCE COMPANY, INDIANAPOLIS, *Est.* 1902;

MICHIGAN MILLERS MUTUAL INSURANCE COMPANY, LANSING, *Est.* 1881;

MILL OWNERS MUTUAL INSURANCE COMPANY (OF IOWA), DES MOINES, *Est.* 1875;

MILLERS' MUTUAL INSURANCE ASSOCIATION OF ILLINOIS, ALTON, *Est.* 1877;

MILLERS MUTUAL FIRE INSURANCE COMPANY (OF PENNSYLVANIA), HARRISBURG, *Est.* 1890;

MILLERS NATIONAL INSURANCE COMPANY, CHICAGO, *Est.* 1865;

THE MILLERS MUTUAL FIRE INSURANCE COMPANY OF TEXAS, FORT WORTH, *Est.* 1898;

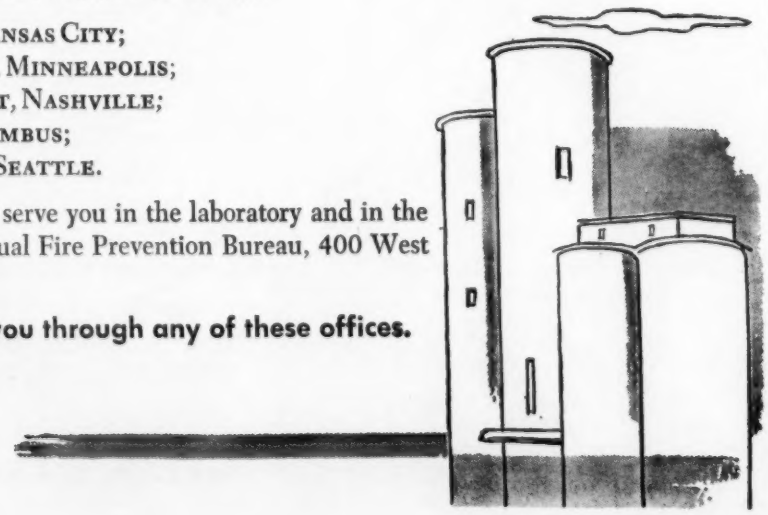
PENNSYLVANIA MILLERS MUTUAL FIRE INSURANCE COMPANY, WILKES BARRE, *Est.* 1877.

Collectively these companies are known as the "Mill Mutuals" and compose the Association of Mill and Elevator Mutual Insurance Companies, which operates the Mill Mutual Fire Prevention Bureau, and Departmental Offices of the Mills Mutuals as follows:

SOUTHWESTERN DEPARTMENT, KANSAS CITY;
NORTHWESTERN DEPARTMENT, MINNEAPOLIS;
SOUTHEASTERN DEPARTMENT, NASHVILLE;
OHIO DEPARTMENT, COLUMBUS;
PACIFIC DEPARTMENT, SEATTLE.

In addition to their fieldmen, to serve you in the laboratory and in the field are the engineers of Mill Mutual Fire Prevention Bureau, 400 West Madison Street, Chicago.

This service is available to you through any of these offices.

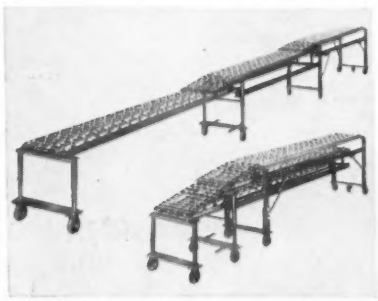


No. 9197—Bag Closing Machine

Crown-Zellerbach Corp. announces the development of the "Crown Thermo-Tape Machine" for in-plant closure of sewn bags with polyethylene-coated tape. The machine heat seals the coated kraft tape to the bag top to stop sifting. The unit, according to the company, fits into the production line in synchronization with the sewing machine. The filled multiwall bag moves into the sewing machine and then passes through the tape machine with no manual assistance. The tape cutting is automatic as is the tape feed mechanism. The tape, with as little as 10 lb. polyethylene coating gives permanent 100% seal against leakage through needle holes. Softened by heat, the polyethylene moulds to the stitch line in a permanent bond, the company says. For details, check No. 9197 on the coupon and mail.

No. 9192—Gravity Conveyor

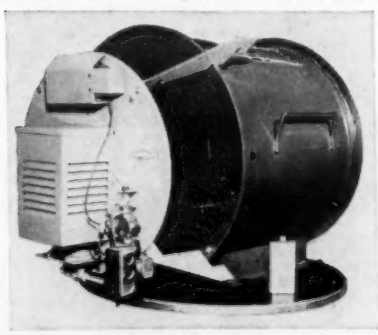
The Rapistan Extendible Gravity Conveyor that can be extended from less than 11 ft. to 30 ft. in length, has been announced by the Rapids-Standard Co. Mounted on casters to make it readily portable, the unit is a "nesting" set of three 18 in. gravity wheel conveyor sections designed for use in loading and unloading trucks and for moving materials into stacking areas and in other warehousing applications. When used for loading, the conveyor is extended as far as required into the truck, car or bay. As loading progresses, the conveyor is telescoped gradually until it is fully compressed, if necessary. The unit is also adjustable for



height. The loading end can be raised from 34¼ in. to 41½ in., with the unloading end adjustable from 20¼ in. to 27¼ in. For details, check No. 9192 on the coupon and mail.

No. 7787—Crop Dryers

Lennox Industries, Inc., announces the addition of two new products to its line of crop drying and aeration equipment. A heat section using natural gas and known as the GB9-4000N is avaailable for use on the Lennox Super 600 recirculating dryer. The unit is powered by a 15 h.p. motor using three phase 110 volt AC current. The unit permits use of natural gas fuel at elevator installations where it is more economical than LP gas fuel. The other new product is the GBI-75 supplemental heat dryer (pictured above). Feature of this dryer is an automatic humidistat on-off control. This control solves a problem in drying by shutting off the heat when relative humidity falls below a pre-set level and turning it on when relative humidity goes up to a maximum. The unit operates on LP gas, fits both the 21 in. and the 24 in. Lennox tube-axial fans and may be attached to fans already installed on bins. It also has a two-stage burner which permits operation at 50% capacity—37,500 BTUH and at 100% capacity—75,000 BTUH. For details, check No. 7787 on the coupon and mail.



No. 7790—Container System Booklet

The concept of containerization and the functioning of the Fruehauf-GATX Container Program are described and illustrated in a 14-page booklet released by the Fruehauf Trailer Co. The booklet gives details of applications, operating principles, advantages and general specifications of the system's three basic elements —container, chassis and G-85 rail car. For copies of the booklet, check No. 7790 on the coupon and mail.

——BREAD IS THE STAFF OF LIFE——

DOUBLES STORAGE CAPACITY

NEY, OHIO—The Ney Cooperative Grain Co. here has doubled its storage capacity with the recent construction of a flat storage warehouse. Built of galvanized steel, the warehouse measures 50 ft. by 124 ft., and has a capacity of 64,000 bu. The new storage facility boosts the total storage capacity to 120,000 bu.

Continual expansion of the processing industries demands equipment designed and developed for *today*. Our MIKRO-BUD is an example of this type of planning. Recent changes in this vertical hammer mill were dictated by field tests on a variety of materials including cocoa, rubber accelerators, sodium sulphate, sugar, phenolic resins, dyes, colors and tobacco. Capacities have been stepped up from 40 to 100 per cent, depending on the material in process. Efficient air flow has added to the range of heat-sensitive materials handled without coolants. A selector control wheel allows adjustment over a wide range of particle sizes without shutting down the mill. Write for Bulletin 51-C-1.

The MIKRO-BUD is one of four different designs and 12 sizes of Mikro pulverizing equipment offering grinds from granular to the lower micron ranges, and capacities up to 20,000 lbs/hr on certain materials.

MIKRO-Products
PULVERIZING MACHINERY
6 Chatham Rd., Summit, N. J.
A Division of Metals Disintegrating Company
Division of American-Marietta Company

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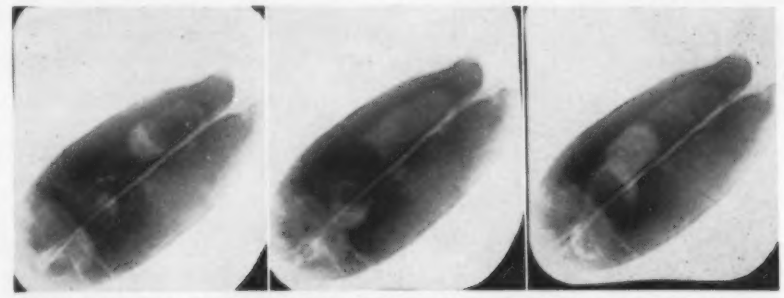
X-Rays Help K-State Scientists Study Weevil-Ridden Wheat Kernels

MANHATTAN, KANSAS—X-rays are being used by the department of entomology at Kansas State University to study the behavior and development of the rice weevil inside wheat kernels.

As a result of these studies, K-State probably has the only series of X-rays showing cannibalism of one rice weevil on another, says John R. Pederson, K-State entomologist.

Under a $29,210 grant from the Public Health Service, the researchers have been studying "Effects of Environment on Stored Grain Insects" for the past two years. With the use of X-ray, they hope to observe development of the insects under several different sets of environmental conditions and X-ray technique serves to make certain aspects of the study more efficient.



NOW YOU SEE IT—Kansas State University X-ray studies show cannibalism of one weevil on another. Picture No. 1 shows two weevils inside a single kernel of wheat, while pictures No. 2 and 3 show the top weevil moving down into the other compartment.

Two hundred infested wheat kernels were used in the current phase of the projects. These were X-rayed daily throughout the development cycle of the weevil, which takes about 33 days. The radiographs, in turn, are blown up in black and white prints and mounted in sequence for analysis.

X-ray techniques to determine grain infestation on a commercial basis were developed in 1950 by two K-State staff members, Max Milner and Robert Katz. X-ray is now used on a commercial basis in many flour mills and elevators to detect infestation, Mr. Pederson says.

It is believed that the efforts at K-State represent the first attempt to study the "biology and behavior" of insects inside the wheat kernel with the use of X-ray.

So far the entomologists have been using an X-ray grain inspection unit about the size of an apartment-size stove, but recent developments indicate that use of a new X-ray microscope gives a much better picture. Mr. Pederson has sent some of his samples to be photographed by a unit in Chicago and says even the minute hairs of the wheat kernel beard show up in the prints.

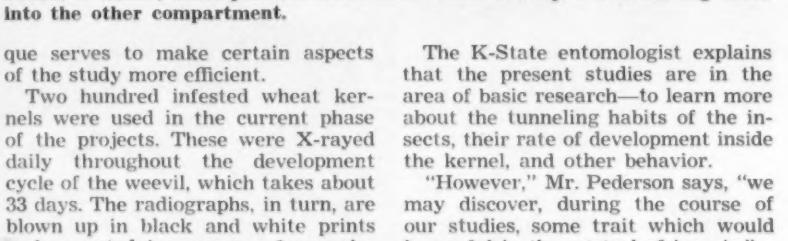
The K-State entomologist explains that the present studies are in the area of basic research—to learn more about the tunneling habits of the insects, their rate of development inside the kernel, and other behavior.

"However," Mr. Pederson says, "we may discover, during the course of our studies, some trait which would be useful in the control of insects."

Only the rice weevil has been studied with X-rays at K-State so far, but the entomologist says he and his colleagues hope to expand their studies to include three other insects which develop inside kernels of grain—the granary weevil, lesser grain borer, and the Angoumois grain moth. The rice weevil and the lesser grain borer are more prevalent in Kansas than the other two.

Before the use of X-ray, scientists had to dissect each individual kernel to observe insects inside and in certain types of studies this could affect development, Mr. Pederson says. X-ray does not appear to affect development, he adds.

Director of the public health service project at K-State is Donald A. Wilbur, who is on leave studying grain storage conditions and problems in Mexico. Mr. Pederson has assumed a portion of Mr. Wilbur's research work in his absence.



BUYING TWO NEW MILLS—Here is how two men look after they have placed an order for two new flour mills with a total capacity of 4,700 cwt., basis 24 hours' operation. At center right is J. Tada, managing director of the Nitto Flour Milling Co., Tokyo, and on the far right T. Sawabe, the firm's technical director. The two other men are, at left, Head Miller Stuchelli, who has had experience in Japan, and Chief Erector Gerber, both of Buhler Bros., supplier of the mills. The picture was taken at the Buhler factory in Uzwil, Switzerland.

New DAY "RJ" Dust Filter
CONTROLS DUST SAVES DOLLARS

only 3 moving parts

Built under patents of The DAY Company and H. J. Hersey, Jr.

Because of its new, simplified design the DAY "RJ" dust filter will save you many dollars on initial investment, installation, operation and maintenance. Some of the important new construction features of this dust filter are: a new, quick-opening reverse-air, counter-flow valve for maintaining filter media porosity; a new, reverse-air pressure blower arrangement, and new, air tight, yet quickly opened inspection doors.

This patented DAY dust filter has only 3 moving parts but controls dust effectively, efficiently (99.99+%) and economically. It represents the latest refinement in a long-tested, plant-proven dust filter. Using felted filter sleeves to capture dust, the "RJ" is now available in 5 sizes for handling from 300 to 6400 CFM of air (for larger capacities, multiple groupings are furnished).

For more detailed information write toDAY for free Bulletin G-30. It's filled with facts, specifications and dimensions.

The DAY Company

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The Chatfield & Woods Sack Co.
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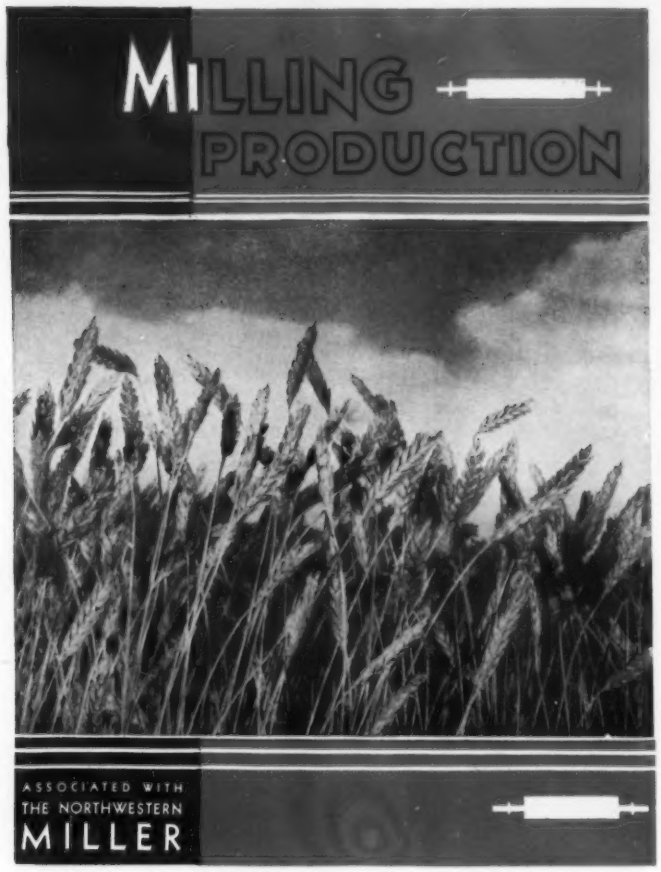
MILL COGS
We make ALL kinds. Specialize in "Ready Dressed" cogs which are READY TO RUN the moment driven and keyed. Write for circular "DW" and instruction sheets free.
The N. P. Bowsher Co., South Bend, Ind.



TRIPLE YOUR ADVERTISING EFFECTIVENESS

1. WORKING CIRCULATION —Studies of flour manufacture show that about 300 of the mills in this country produce 98% of the flour. Milling Production with its controlled circulation reaches more than 1,000 key men in these important flour mills. This working circulation provides contact each month with the people who directly or indirectly control the buying—superintendents, operative millers, chemists and plant managers. *There is no waste circulation—only working circulation* — and you are assured of reaching your potential customers in the most productive mills.

2. LEADERSHIP MAKES READERSHIP — Readership surveys and unsolicited correspondence from its readers attest to the editorial leadership of Milling Production. That editorial leadership is held by complete words-and-pictures reports of the latest milling technology, current news, features and complete coverage of the activities of the industry's two technical associations. *The real price the reader of a publication pays is the amount of time he puts in reading that journal.* Over one half of the readers of Milling Production have requested that it be sent to their homes so that they may enjoy uninterrupted reading pleasure.

3. DOUBLE-DUTY DOLLARS —Money spent for advertising in Milling Production does double duty. In addition to reaching the production personnel, the advertiser's message is read in the Milling Production Section of The Northwestern Miller by the executives who approve purchase orders. *No other advertising medium in the flour milling industry offers this double-duty feature of reaching both groups* — mill technologists and executives—with the same advertising message and for the cost of one advertisement. Take advantage of this 100% coverage through one double-duty advertising contract.

THE MILLER PUBLISHING CO.
The Businesspaper Family Serving the Fields of Flour, Feed, Grain, Baking and Agricultural Chemicals
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MILLING PRODUCTION

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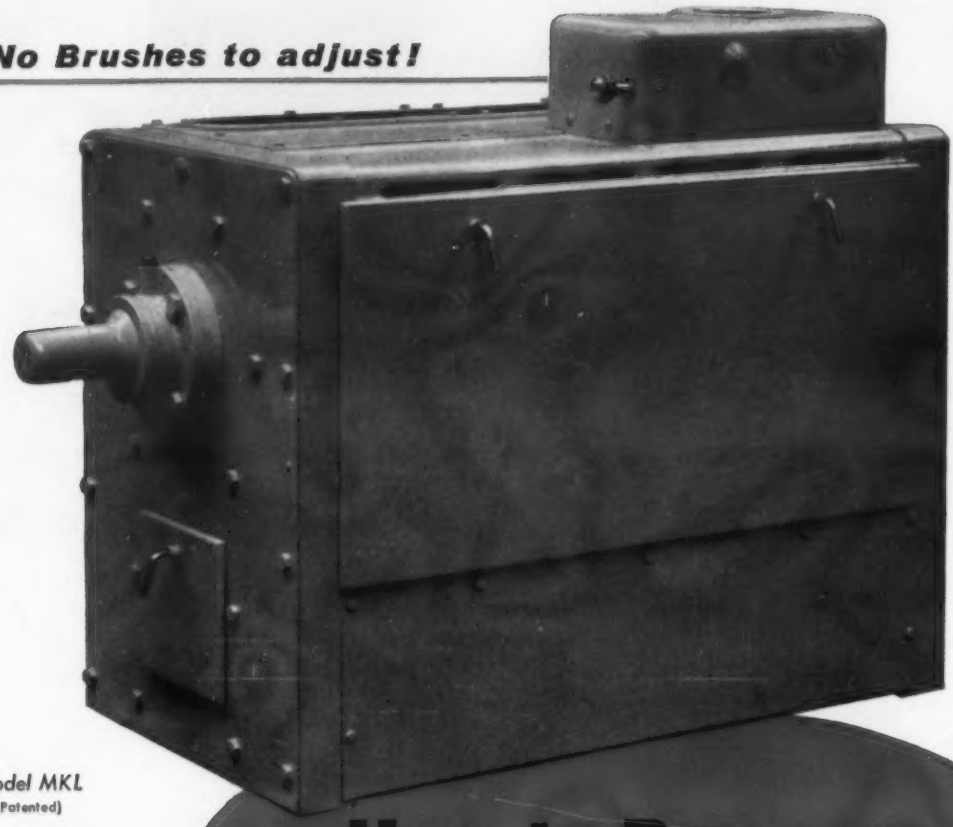
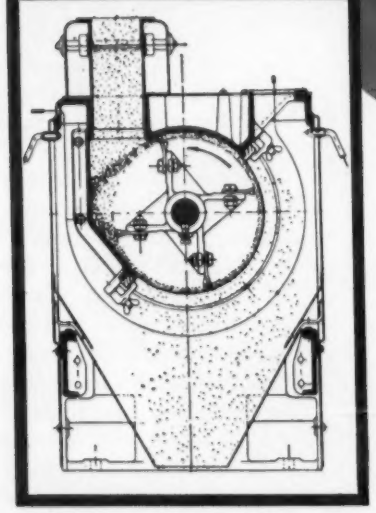
No Brushes to adjust!



Model MKL
(Patented)

How to Remove all the Flour From Your Bran



- Cleans thoroughly, uniformly without reducing bran.
- More flour.
- Compact, high-speed—can be installed in little floor space or suspended from ceiling . . . on the break side or on the reduction side.
- Practically no maintenance and attendance required.
- All-metal construction.
- Little wear . . . not enough to reduce performance.
- Low power requirements.

With the BUHLER Impact Finisher, you can remove the last traces of flour from bran without cutting or splitting it, thus obtaining a bran with a minimum starch content.

Special centrifugal process. A high-speed rotor moves the stock through the machine with a spiral action. To prevent stock from acquiring the same speed as the rotor, which would almost eliminate the impact action, it is continually thrown against a baffle plate. The loosened flour particles pass through a steel screen.

Easy adjustment. A unique inlet regulation controls the length of time the product is exposed to impact action by shortening or lengthening the effective path of the bran through the machine. Changes can be made quickly while machine is running.

Quality product. Bran is large and clean after leaving the machine and the flours are very fine and light in color. Since there is no actual rubbing action, power requirements are low.

Impact Finisher MKL also gives excellent results in rye mills.

Write for details . . . today

BUHLER

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